

DISABILITY IN IOWA

PUBLIC HEALTH NEEDS ASSESSMENT

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Report Preparation

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Public Health Needs Assessment – Disability Baseline

Executive Summary

Introduction

- 1) According to the Centers for Disease Control and Prevention (CDC), the number of adults reporting a disability is expected to increase, along with the need for appropriate medical and public health services. CDC estimates the total number of Americans living with at least one disability is about 50 million, or 1 in 5 people.
- 2) People with disabilities (PWD) face many barriers to good health. Studies show that individuals with disabilities are more likely than people without disabilities (PWOD) to report having poorer overall health, less access to adequate health care, limited access to health insurance, skipping medical care because of cost, and engaging in risky health behaviors including smoking and physical inactivity. The CDC's findings at the national level are not different from the findings for Iowa.
- 3) The aims of this public health needs assessment (PHNA) are: Assess the burden of disability in Iowa counties including health risk factors such as chronic conditions-- cardiovascular diseases, obesity, stroke, or mental health issues. At the county level, determine access to preventive health care-- insurance, personal doctor, and health screenings. Identify unhealthy behaviors-- lack of exercise, substance abuse, and lack of seat belt use. Determine the effect of socioeconomic conditions-- education level achievement, employment and income.

Methods

This public health needs assessment of disability in Iowa used primarily two data sources the American Community Survey (ACS) and the Behavioral Risk Factor Surveillance System (BRFSS) survey, which was analyzed using the raw data along with findings from the Disability and Health Data System (DHDS).

The state level assessment was based on the 2009-2012 ACS data; publicly available BRFSS 2011 from the Disability and Health Data System (DHDS). The 2001-2010 combined BRFSS data was used for county level assessment.

The state-level disability age-adjusted estimates were compared with national level estimates. The age-adjusted county estimates were ranked and mapped using quintile distribution.

Findings

From 2009 to 2012, ACS data showed the proportion of Iowans older than five years who reported disability decreased from 13% in 2009 to 11% in 2012.

Iowans reported a higher proportion of low to no hearing disabilities, while nationally rates were higher for physical and work limitations. Iowa had a higher proportion of people reporting these limitations in non-metro counties (proxy for rural) than in non-metro counties in the US.

Age was an important predictor of disability. The age-specific prevalence of disability was higher in the nation among the 45-64 age group than among Iowans in the same age group. There were no differences in the prevalence of disability in the younger age group (under 45).

Iowa's non-metro counties had a higher age-adjusted prevalence of physical, vision, hearing, self-care and work-related disabilities compared to metro counties. The risk of multiple disabilities was 50% higher in non-metro counties.

According to the 2001-2010 BRFSS data analysis, the county distribution of the age-adjusted prevalence of disability shows a cluster of higher rates in the southeastern and southwestern corners of the state.

Compared to adults without disabilities, adult Iowans with disabilities differ in general health status and chronic disease prevalence; a higher proportion of people with disabilities (PWD) reported the following:

- Fair to poor health within the last month (33% vs. 6%)
- At least one day in the last 30 days when physical health not good (19% vs. 1%)
- High blood pressure (42% vs. 24%)
- Coronary heart disease (11% vs. 3%)
- Heart attack (11% vs. 3%)
- Stroke (8% vs. 1%)
- Diabetes (20% vs. 6%)
- Arthritis (57% vs. 16%)

Residents of rural counties in the southern tiers and along the state periphery demonstrated a higher age-adjusted prevalence of chronic conditions among PWD.

Compared to people without disabilities (PWOD), PWD had significant differences in risk factor exposures.

- PWD had a higher risk of smoking as well as being obese (BMI of 30 or more) and a lower risk of having at least one drink of alcohol within the past 30 days (30-day drinking) or having five or more drinks (4 or more for females) on one occasion (binge drinking) compared to PWOD.
- The distribution of age-adjusted risk factor prevalence among PWD in counties demonstrated small clusters of counties within the highest quintile in eastern and central regions for binge drinking; small clusters in eastern and central Iowa as well as one mega cluster in southern regional counties for smoking; major clusters in southern and central regions for no leisure time physical activities. Discreet clusters of counties within the highest quintile of PWD not always using seatbelts appeared in the northern region.

Compared to PWOD, PWD had some differences in access indicators. These include the following:

- PWD were less likely to report having health insurance. Compared to the national data, in general, Iowans had a higher proportion of PWD who were insured. Iowans with disabilities over the age of 65 were more likely to report receiving pneumonia vaccine than the PWDs in the same age group nationally.
- An age-adjusted distribution of PWD access indicators by county showed a major cluster of counties with a high prevalence of those without health insurance in the southern region of the state (with smaller clusters in the central and western counties). There was a major cluster of counties in the highest quintile of PWD without a personal doctor in southeastern region of the state (with smaller clusters in the northeast. There was evidence of major clustering in southern Iowa along the Missouri state line for PWD not visiting a doctor due to cost.
- There was no specific clustering of counties with the highest prevalence of PWD not receiving a flu shot or for those who did not receive a mammogram within past two years. There was some clustering in the southern, northern and northwestern regions of the state and the mostly rural counties of PWD who did not have a PSA test (males 40). Also, there was clustering in southern and west central regions of the state and mostly rural counties for those who have never had a sigmoidoscopy or a colonoscopy. As a result, areas of highest access needs among PWD were identified in southern Iowa and at the state's periphery.

PWD were more likely to experience negative socio-economic outcomes.

- In Iowa, when compared to PWOD, PWD were more than twice as likely to earn less than \$25,000; 70% of the time they were more likely to have a high school level education or less; and to have the highest proportion of divorce/separation or be widowed. PWD also were 22 times more likely to report inability to work or to be unemployed. However, Iowans with disabilities were more likely to be employed when compared to the national average.
- Comparing disability status between metro and non-metro counties yielded disparities in socioeconomic outcomes. While a higher proportion of PWD in metro counties was considered to be below the 100% federal poverty guidelines, the employment rate for PWD in non-metro counties was lower than those living in metro counties. PWD in metro counties reported a higher proportion of having never been married or for being divorced when compared to PWD in non-metro counties.
- The distribution of the age-adjusted proportion of PWD reporting socioeconomic outcomes showed clusters in the southern and northeastern regions of the state. There were clusters of individuals with an education attainment at the high school level or less, without working, and with household incomes of less than \$25,000. The areas which had the worst socioeconomic outcomes among PWD were located

in southern Iowa, along the state's periphery, and in the northern region of the state.

Conclusions

Adult Iowans with a disability compared to those without face several challenges. They are more likely to suffer from debilitating chronic conditions and social disparities. The assessment determined that counties with higher levels of poverty were more likely to have PWD with higher levels of disability-related disparities.

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Background

According to the Centers for Disease Control and Prevention (CDC), approximately 50 million Americans have some kind of disability that includes mental health problems, low to no hearing, low to no vision, and problems with mobility, cognitive, communication, and social relationships. Since the passage of the American's with Disabilities Act (ADA), progress has been made to improve services to PWD. However, health and social disparities continue.

Disability is usually associated with low socioeconomic status and age. People with disabilities (PWD) are more likely to be poor, have barriers to education and employment, and experience racial disparities. They also experience a higher rate of chronic conditions such as diabetes, depressive syndromes, or arthritis.¹ Consequently, research has shown that while PWD were more likely to visit emergency departments or be hospitalized, they were also more likely to have limited healthcare access.² Furthermore, PWD represent 43% of Medicaid healthcare expenditures.³ A reversal in trends has appeared with a decline in severe disability rates among the elderly population and an increase among working-age people, particularly fueled by obesity.⁴

Establishing sound epidemiological-based needs assessment is important to shape public health policy and deliver resources efficiently. This would improve the quality of life for PWD, prevent associated health complications or secondary conditions, and benefit Iowa's aging population.

For several years, the Iowa Department of Public Health (IDPH) Disability and Health Program (DHP) has partnered with the University of Iowa Center for Disabilities and Development (UI/CDD) to improve the health of Iowans with a disability. IDPH epidemiological activities include establishing a surveillance system, analyzing national datasets, and assessing the burden and health equity gap between PWD and PWOD. During the previous grant cycle, surveillance was limited in its scope at the state level using Behavioral Risk Factor Surveillance System (BRFSS) and the American Community Survey (ACS) data. Some measures were captured for evaluation and monitoring. They included prevalence of disability by gender, age, racial/cultural status, and geography; the quality of life indicators included employment and income status, mental and physical health. The BRFSS healthcare access indicators addressed insurance coverage and access to preventive services such as receiving a flu shot, dental visits, and health screenings.

The BRFSS and ACS data did not address local issues. A new CDC grant awarded to IDPH included goals and objectives for a statewide public health needs assessment (PHNA) to focus on local problems using the existing infrastructure and methods from the Community Health Needs Assessment and Health Improvement Plan (CHNA/HIP). At least every five years, local boards of health lead community-wide discussions of community health needs. After the needs of the community are identified, objectives and strategies are developed to address those needs.

For this grant, the aims of the PHNA are twofold:

1. Assess the burden of disability by county/community as defined by the stakeholders. Besides quantifying the proportion of PWD by county and identifying the different type of disabilities,

the assessment should be designed to include an analysis of health risk factors such as chronic conditions (cardiovascular diseases, obesity, stroke, and mental health issues).

2. Determine the level of access to preventive health care (insurance coverage, having an identified personal doctor, receiving regular health screenings), unhealthy behaviors (lack of exercise, substance abuse, not always using a seat belt), and socioeconomic outcomes (education level achievement, employment, and income).

Methods

Data Sources

The PHNA primarily used two data sources: the American Community Survey (ACS) and the Behavioral Risk Factor Surveillance System (BRFSS) survey.

ACS is offered annually, replacing the decennial Census Long Form, for ongoing data surveillance. The ACS gives reliable state-level disability estimates, like the full census, but it does not provide disability data on smaller geographic units within the states. In the ACS, disability is defined as “a long-lasting physical, mental, or emotional condition; which makes it difficult for a person to do activities such as walking, climbing stairs, and dressing, bathing, learning, or remembering. This condition can also impede a person from being able to go outside the home alone or to work at a job or business.” The following are six questions used to assess disability. These are particularly related to sensory conditions, learning and remembering difficulties, physical activities, self-care, difficulty going out, and work-related limitations:

1. Hearing Disability (asked of all ages): "Is this person deaf or does he/she have serious difficulty hearing?"
2. Visual Disability (asked of all ages): "Is this person blind or does 'he/she' have serious difficulty seeing even when wearing glasses?"
3. Cognitive Disability (asked of people ages 5 or older): "Because of a physical, mental, or emotional condition, does this person have serious difficulty concentrating, remembering, or making decisions?"
4. Ambulatory Disability (asked of people ages 5 or older): "Does this person have serious difficulty walking or climbing stairs?"
5. Self-Care Disability (asked of people ages 5 or older): "Does this person have difficulty dressing or bathing?"
6. Independent Living Disability (asked of people ages 15 or older): "Because of a physical, mental, or emotional condition, does this person have difficulty doing errands alone such as visiting a doctor's office or shopping?"

Because public data files were used, disability could not be described at a county level. However, there were several fields used to identify Iowa metro-cities. Therefore, metro-cities were used to represent urban Iowa. The remaining areas were classified as non-metro counties, a proxy for rural.

The BRFSS is an annual, random telephone survey. It has been used in Iowa for a very long time and evaluation studies have demonstrated its reliability. Disability status of the adult population (18 years of age or older) is determined by the participants responding to one of two specific questions about activity limitations due to any health problem and the use of equipment because of a health limitation. The disability status of a respondent was determined using the following two BRFSS questions: “*Are you limited in any way, in any activities, because of physical, mental or emotional problems?*” and “*Do you now have any health problem that requires you to use special equipment such as a cane, a wheelchair, a special bed, or a special telephone?*” Respondents were defined as having a disability if they answered “Yes” to either of these questions. Respondents were defined as not having a disability if they answered “No” to both questions.

Analysis

Basic univariate analyses were run, with significance level tested with the Chi-Square test for binomial distributed outcomes and the Cochran-Mantel-Haenszel test for categorical exposure variables. For significance level and statistical test, a p value of 0.05 or less was considered significant. The Statistical Analysis Software (SAS 9.2) and the Software of Correlated Data Analysis (SUDAAN callable software) from the Research Triangle Institute were used for data management and data analysis.

The prevalence estimates represent several-year (4 years for ACS and 10 for BRFSS) averages that were age-adjusted using the 2000 census age weights. Because of the nested nature of the BRFSS and the combination of several years, the field year of the survey was used as a stratum, and the design weight was applied consistently during the data analysis. Therefore, the resulting weighted frequencies represented the total number of people estimated during the 10-year period and were averaged at the end.

The 2009-2012 ACS data and publicly available BRFSS 2011 from the Disability and Health Data System (DHDS) online analysis tool provided by the CDC were used for the state-level assessment. State-level age-adjusted disability estimates were compared to the national estimates.

The county level assessment used the 2001-2010 BRFSS data. The age-adjusted county estimates were ranked and mapped using quintile distribution for each major indicator group, which included: general health status, behavioral risk factors, access to preventive services and care, and socioeconomic outcomes. Composite scores were calculated to identify counties of highest need. The counties were ranked by the magnitude of each indicator and were given a score from 0-3. Counties that were in the top 10% were given 3 points, counties in the top 10-25% received 2 points, 1 point was given to counties from 25-50%, and counties in the lower half were awarded 0 points. After scoring, the sums of the scores that were generated had a range from zero to triple the number of indicators in the specific groupings. For example, for socioeconomic outcomes, the specific indicators combined were percent of PWD earning less than \$25,000, percent of PWD having no more than high school-level education, and the percent of PWD unable to work because of disability. Since there are three indicators, the maximum score would be 9. If there were four indicators in the grouping, the maximum score would be 12. Final scores in each grouping were plotted to identify the counties with greatest need for that particular grouping.

Results

Disability Prevalence

The general population disability prevalence was assessed using ACS and BRFSS.

State Level (ACS)

Disability Prevalence Trend

The ACS disability prevalence represents lowans 5 years and older who screened positive to any of the six disability questions. From 2009 to 2012, ACS data showed a decrease in the proportion of lowans who reported disability from 13% in 2009 to 11% in 2012. The disability prevalence remained stable in the general US population (Figure1).

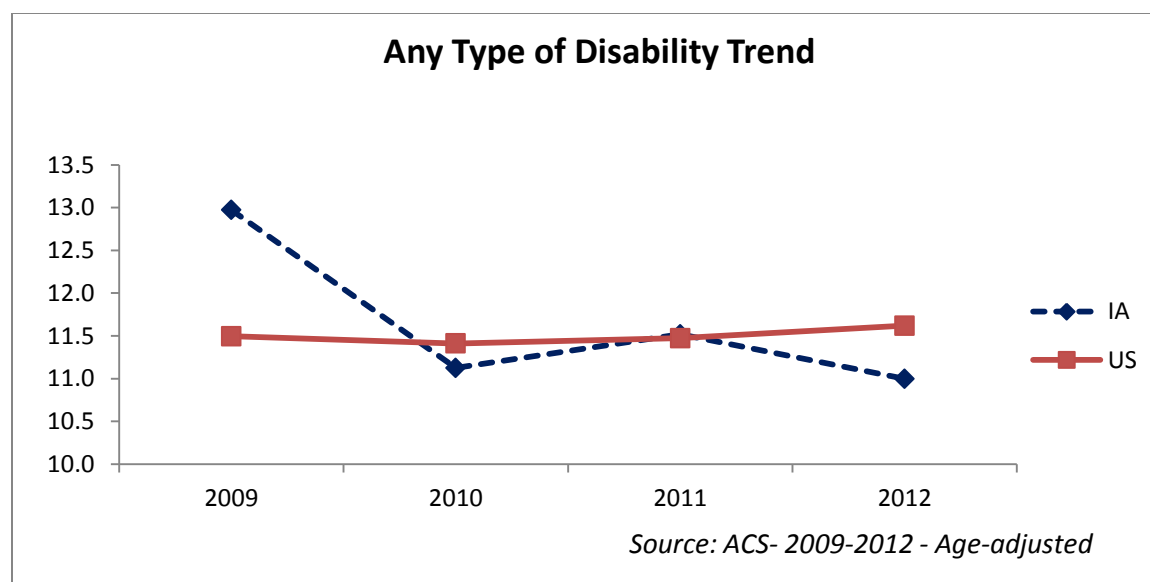


Figure 1: Disability Trend Comparing IA to US, ACS 2009-2012

Types of Disabilities

Table 1 shows the total number and proportion of people reporting a disability in Iowa and the US. From ACS, the overall three-year, age-adjusted average prevalence rate of disability in Iowa (11.7%) is not significantly different from US prevalence (11.5%). However, there were significant differences in the type of limitations. Iowans reported a higher proportion of low-to -no hearing disability while nationally rates were higher for physical disability and work limitations. Iowa had a higher proportion of people reporting disability in non-metro counties (proxy for rural) than in the US rural counties.

Among adults, 20.5% of Iowans reported having a disability, compared with 24.4% in the United States. In Iowa, one in five adults reported: “being limited in activities because of physical, mental and emotional problem” compared to one in four in the US. While 6% in Iowa reported “having health problem that required equipment,” the proportion was 8% in the US (Table 2).

Table 1: Disability Prevalence by Types Comparing Iowa and US, ACS 2009-2012

Disability Types	Iowa		US		P. Value
	N	%	N	%	
Any type	276,683	11.7	26,933,946	11.5	0.6576
Physical	147,816	6.2	16,162,881	6.9	0.0133
Hearing	91,427	3.9	7,326,694	3.1	0.0002
Vision	43,718	1.8	3,957,197	1.7	0.2828
Remembering	84,638	3.6	8,117,396	3.5	0.6080
Self-care	37,887	1.6	4,737,578	2.0	0.0041
Work	215,402	9.1	23,404,376	10.0	0.0046
Multiple Disabilities	161,954	6.8	16,635,982	7.1	0.3259
Non-Metro Disability	203,257	12.7	11,924,860	10.5	<.0001

Table 2: Proportion of Adults in Iowa Who Reported “Being Limited” or “Needing Special Equipment” Compared to the Nation, BRFSS 2011

Disability Specifics	Iowa	US	P. Value
Adults who are limited in any activities because of physical, mental, or emotional problems	20.2	24.3	<0.05
Adults with health problem(s) that requires the use of special equipment	6.3	7.9	<0.05

Notes: US represents only continental US.

Source: http://www.cdc.gov/brfss/data_tools.htm

Demographic Distribution

Table 3 and Table 4 illustrate the demographic makeup of PWD compared to PWOD from the ACS and BRFSS.

According to the three-year combined ACS data, the average prevalence of disability among Iowans 5 years and older was 11.7%. Age was an important predictor of disability. Between the ages 45-64, the prevalence of disability doubled compared to people under 45. One out of three Iowans over the age of 65 reported having at least one disability. The age-specific prevalence of disability was higher nationally among the 45-64 year-old group than among Iowans in the same age group. There were no differences in the prevalence of disability in the younger age group (under 45). The prevalence of disability in the 65+ age group was higher among Iowans (35%) compared to the nation (31%).

Stratified by gender and race, there were no differences in disability between Iowa and the nation. Overall, Hispanics showed the lowest prevalence (8%) of disability when compared to Non-Hispanic Whites, Blacks, and other racial/ethnic groups.

Iowa veterans and people living in non-metro counties had a higher prevalence of disability compared to veterans and non-metro counties at the national level.

The BRFSS 2011 derived from the Disability and Health Data System (DHDS) showed a different picture from the ACS. These differences are due to differences in data collection methods. ACS collects data from a sample of housing units, group quarters, and people, while the BRFSS uses a sample of residential and mobile telephones, limiting its catchment areas to specific populations with phone access. The interviews are conducted differently as well. The BRFSS data showed that Iowans were less likely to report having a disability than those in the rest of nation.

Among young adults, males and females, and veterans and non-veterans, Iowans reported a lower percent of disability than at a national level. Non-Hispanic Whites in Iowa also had a lower age-adjusted prevalence of disability than in the nation. However, there were no differences in disability among minorities in Iowa and in the nation.

Table 3: Demographic Distribution of Disability Prevalence in Iowa, ACS 2009-2012

Demographics	Iowa %	95%CI	US %	95%CI
State	11.7	0.7	11.5	0.10
<18	3.7	1.3	3.9	0.2
18-44	4.7	0.6	4.5	0.1
45-64	10.8	1.1	12.3	0.2
65+	34.9	2.6	31.2	0.4
Male	11.5	0.9	10.9	0.1
Female	11.8	0.9	12.0	0.1
NH Whites	12.1	0.7	12.4	0.1
NH Blacks	10.8	3.2	12.8	0.3
Hispanics	5.6	1.7	7.6	0.2
Other	8.9	2.6	8.2	0.3
Non Veterans	10.5	0.7	10.8	0.4
Veterans	25.7	3.1	21.8	0.4
Non-Metro	12.7	0.8	10.5	0.1
Metro (Big Cities)	9.5	1.1	12.4	0.1

Notes: The estimates represent Iowans, ages 5 years and older

Table 4: Age-adjusted Prevalence of Disability among Adults by Demographics, 2011 BRFSS

Demographics	Iowa		US	
	Prevalence %	95%CI	Prevalence	95%CI
All	20.5	1.1	24.4	0.2
18--44	12.5	1.7	15.5	0.4
45-64	24.5	1.9	31.1	0.4
65+	38.6	2.4	40.5	0.5
Male	19.4	1.7	22.9	0.4
Female	21.5	1.6	25.9	0.3
White	20.0	1.2	25.4	0.3
Black	28.8	9.9	25.1	0.8
Hispanics	20.0	7.9	20.4	0.8
Veterans	23.3	4.9	28.7	0.9
Non-Veterans	20.5	1.2	24.1	0.2

Source: http://www.cdc.gov/brfss/data_tools.htm

County Level (BRFSS-ACS)

As a stratified random digit telephone survey, BRFSS has been changed in terms of sampling in 2011. Therefore, 2011 and 2012 cannot be combined with earlier years of data to estimate county prevalence. Hence, in this needs assessment of the burden of disability at the county level, the 2001-2010 data were combined to estimate the age-adjusted prevalence of disability by county. The mapping used a quintile distribution to illustrate counties of highest needs. People who responded affirmatively to “having a condition that limits their physical” or “needing special equipment because of a health problem,” were considered PWD. The BRFSS only surveyed people 18 years of age and older.

According to the ACS, Iowa non-metro (rural) counties had a higher age-adjusted prevalence of physical, low to no vision, hearing, self-care, and work-related disabilities compared to metro counties. In addition, the risk for having more than one disability was 50% higher in non-metro counties (Table 5).

According to the combined 2001-2010 BRFSS, the county distribution of the age-adjusted prevalence of disability shows a cluster of higher rates in the southeastern and southwestern corners of the state (Figure 2).

Table 5: Type of Disability comparing Iowa Non-Metro to Metro Residents, ACS 2009-2012

Disability	Non-Metro %	Metro (Big Cities) %	Risk Ratio	P. Value
Physical	6.8	5.0	1.3	0.0014
Vision	2.1	1.4	1.5	0.0179
Hearing	4.3	3.0	1.4	0.0028
Remembering	3.8	3.1	1.2	0.0776
Self-care	1.8	1.2	1.5	0.0430
Work	9.9	7.3	1.4	<.0001
Multiple Disabilities	7.6	5.2	1.5	<.0001

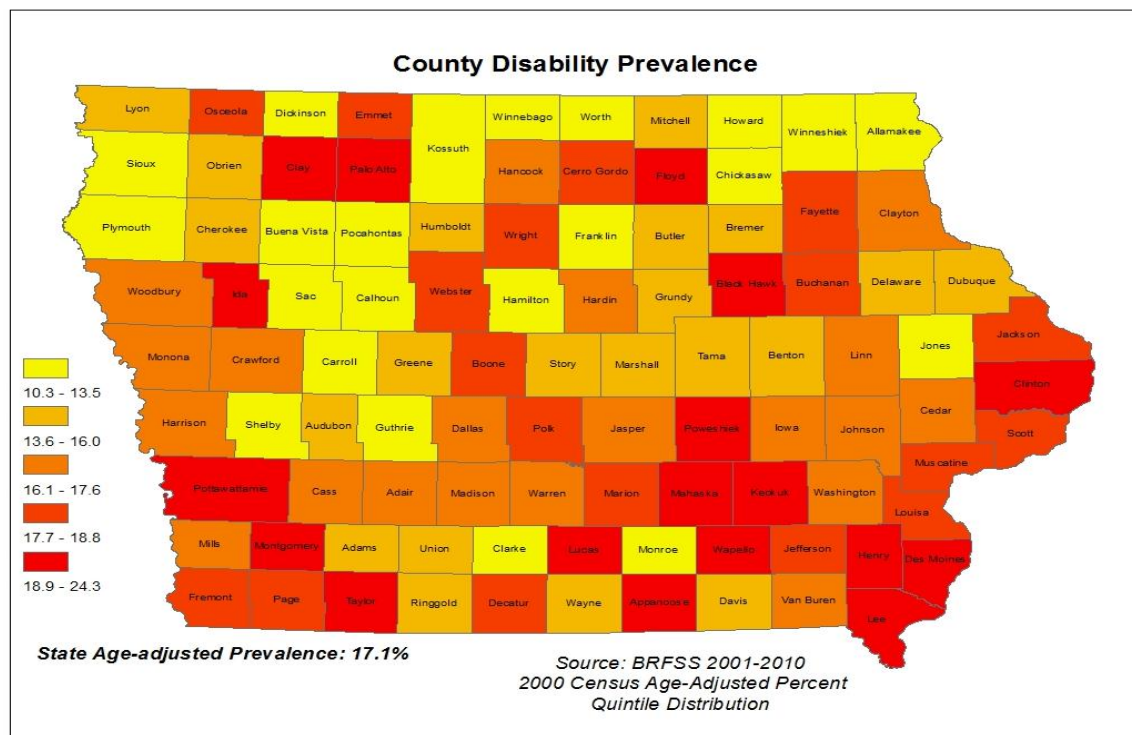


Figure 2: Age-adjusted Prevalence of Disability by County, BRFSS 2001-2010

General Health Status and Chronic Conditions

The BRFSS included several questions on general health and chronic conditions such as arthritis, asthma, chronic obstructive pulmonary disease (COPD), cancer, prostate, diabetes, stroke, and cardiovascular diseases. All questions regarding secondary or morbid conditions were not asked every year.

The CDC's Disability and Health Data System (DHDS) state profiles looked at 2010 and 2011 BRFSS data. Because of concerns using trending data, IDPH strongly believes that 2010 and 2011 data should not be reported at the same time. Therefore, this report only features 2011 indicators.

Morbid Conditions

BRFSS respondents were asked: "Would you say that in general your health is excellent, very good, good, fair, or poor?" Responses were grouped into two yes and no categories. Respondents who reported fair or poor health were defined as "Yes." The number of days with poor physical health was assessed by asking: "Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?" In this report, responses of zero (none) and 30 days are presented.

State Level (BRFSS-2011&2012)

Compared to adults without disabilities, adult Iowans with disabilities have differences in general health status and chronic disease prevalence. In 2011, as queried from the DHDS and compared to PWD, PWD had a higher rate of poor health and chronic diseases. A higher proportion of PWD reported fair to poor health within the last month (33% vs. 6%); having at least one day in the last 30 days when physical health not good (19% vs. 1%); having high blood pressure (42%vs. 24%), having had coronary heart

disease (11% vs. 3%), heart attack (11% vs. 3%), stroke (8% vs. 1%), diabetes (20% vs. 6%), and arthritis (57% vs. 16%). The findings were statistically significant (Table 6).

When stratified by demographics and comparing lowans with disabilities to their US counterparts, there were no significant differences in the prevalence of chronic conditions such as high blood pressure, stroke, diabetes, and arthritis. However, a smaller proportion of lowans with disabilities reported fair to poor health, especially among 45-64 year olds, and activity limitations, especially among males. Generally, the rate of chronic disease among PWD in Iowa and the US was higher after 45 years of age but not significantly different between the age groups 45-64 and 65+. Chronic disease rates were not significantly different among PWD across genders (Table 7).

Table 6: Age-adjusted Prevalence of Chronic Conditions and Risk Ratios by Disability Status in Iowa, 2011 BRFSS

Indicator (year)	PWD	PWOD	Risk Ratio	P. Value
Fair or poor self-rated health (2011)	32.8%	6.2%	5.3	0.00
Physically unhealthy days in the past 30 days				
No days (2011)	42.1%	76.5%	0.6	0.00
30 days (2011)	19.1%	1.0%	19.1	0.00
Activity limitation days in the past 30 days				
No days (2011)	59.3%	88.2%	0.7	0.00
30 days (2011)	10.3%	0.4%	25.8	0.00
Ever had high blood pressure (2011)	42.3%	23.6%	1.8	0.00
Taking medicine for high blood pressure (2011)	62.7%	57.5%	1.1	0.22
Have heart disease (2011)	11.3%	3.3%	3.4	0.00
Ever had high cholesterol (age 20+) (2011)	41.1%	31.5%	1.3	0.00
Ever had arthritis (2011)	46%	15%	30.7	0.00
Joint pain due to arthritis in the past 30 days (2011)	34%	12%	21.6	0.00
Work limitation due to arthritis (2011)	49%	17%	31.7	0.00
Currently have asthma (2011)	18%	7%	11.4	0.00
Ever had asthma (2011)	22%	10%	11.6	0.00
Ever had cancer (excluding skin cancer) (2011)	11%	4%	6.1	0.00
Ever had skin cancer (2011)	7%	5%	2.1	0.00
Have chronic obstructive pulmonary disease (COPD) (2011)	12%	2%	9.6	0.00
Have diabetes (2011)	14%	5%	8.8	0.00
Have kidney disease (2011)	3%	1%	2.8	0.00
Ever had a stroke (2011)	5%	1%	3.8	0.00
At risk for HIV (age 18-64) (2011)	4.8	2.5	1.92	0.08

Source: <http://dhds.cdc.gov/profiles>

Table 7: Proportion of PWD Reporting Chronic Health Conditions Comparing Iowa to US, 2011 BRFSS

Demographics	18 - 44	45 - 64	65+	Male	Female	White
Fair or Poor Self-Rated Health - Yes						
Iowa	26.2 (±6.0)	40.0 (±4.4)	41.0 3(±3.9)	31.4 (±5.0)	33.9 (±4.8)	32.1 (±3.7)
US	32.6 (±1.1)	46.7 (±0.8)	46.5 (±0.8)	38.5 (±1.0)	39.8 (±0.8)	36.2 (±0.8)
Physically Unhealthy Days in Past 30 Days - 30 days						
Iowa	15.1 (±5.0)	24.5 (±4.0)	21.9 (±3.2)	18.7 (4.1)	19.4 (±4.2)	19.2 (±3.2)
US	15.4 (±0.9)	24.2 (±0.7)	21.4 (±0.6)	19.6 (±0.6)	18.6 (±0.7)	19.2 (±0.6)
Activity Limitation Days in Past 30 Days - 30 days						
Iowa	7.7 (±3.6)	15.1 (±3.5)	10.2 (±2.7)	12.1 (±3.4)	8.7 (±2.9)	10.0 (±2.3)
US	12.3 (±0.8)	16.1 (±0.6)	11.9 (±0.5)	14.6 (±0.8)	12.3 (0.6)	12.7 (0.5)
Ever Had High Blood Pressure - Yes						
Iowa	28.5 (±6.6)	51.0 (±4.5)	69.7 (±3.6)	44.6 (±6.1)	40.0 (±4.6)	42.0 (±4.2)
US	26.1 (±1.1)	53.5 (±0.8)	69.6 (±0.7)	44.7 (±1.0)	39.0 (±0.8)	39.6 (±0.7)
Have Heart Disease - Yes						
Iowa	5.6 (±3.2)	14.7 (±3.1)	23.0 (±3.3)	14.1 (±3.6)	9.1 (±2.1)	11.0 (±2.0)
US	3.7 (±0.4)	14.6 (±0.6)	27.4 (±0.7)	13.5 (±0.5)	9.1 (±0.3)	10.5 (±0.3)
Ever Had a Stroke						
Iowa	DS	7.1 (±2.4)	11.4 (±2.4)	6.4 (±3.1)	3.6 (±3.6)	4.8 (±1.7)
US	3.0 (±0.4)	7.5 (±0.4)	12.5 (±0.5)	5.9 (±0.4)	6.0 (±0.3)	5.3 (±0.3)
Currently Have Asthma - Yes						
Iowa	21.0 (±6.0)	16.4 (±3.3)	10.4 (±2.5)	14.9 (±4.8)	20.4 (±4.7)	18.1 (±3.6)
US	19.7 (±1.0)	16.7 (±0.6)	12.4 (±0.5)	12.2 (±0.7)	22.2 (±0.8)	17.4 (±0.7)
Have Chronic Obstructive Pulmonary Disease (COPD) - Yes						
Iowa	6.9 (±3.4)	17.6 (±3.6)	17.8 (±3.2)	9.8 (±2.4)	13.8 (±3.4)	12.2 (±2.4)
US	8.9 (±0.7)	17.5 (±0.6)	20.0 (±0.6)	11.5 (±0.6)	15.1 (±0.6)	13.9 (±0.5)
Have Diabetes - Yes						
Iowa	5.3 (±2.7)	21.4 (±3.7)	26.8 (±3.6)	14.5 (±3.1)	13.4 (±2.4)	13.8 (±2.1)
US	6.9 (±0.6)	21.2 (±0.6)	27.8 (±0.7)	15.3 (±0.7)	14.3 (±0.5)	13.0 (0.4)
Ever Had Arthritis - Yes						
Iowa	29.6 (±6.5)	60.6 (4.4)	71.6 (3.5)	40.2 (±5.7)	50.9 (±4.9)	46.7 (±4.0)
US	28.4 (±1.1)	59.5 (±0.8)	70.9 (0.7)	39.5 (±1.0)	49.3 (±0.8)	46.5 (±0.8)

Source: <http://dhds.cdc.gov/profiles>

County Level (BRFSS 2001-2010)

The PHNA estimated the proportion of PWD who responded to having certain disease conditions at the county level. The county age distribution differences were taken into consideration by age-adjusting the weighted percent using US 2000 census data. The most prevalent and disabling conditions that manifested significant disparities, such as cardiovascular diseases (heart attacks and coronary heart disease), stroke, diabetes, obesity, arthritis, and asthma were assessed at the county level. Counties

with darker shades belonged to the highest fifth percentile. A clustering effect was indicated by at least three counties joined together side-by-side

General Health Status

In the core BRFSS survey question, participants were asked “Would you say that in general your health is:” and they would choose from “excellent,” “very good,” “good,” “fair,” and “poor.” Participants were given the option to answer “do-not-know/not sure” or to refuse to answer. Those latter answers were set as missing and excluded from the analysis. The valid answers were split into two types, “poor/fair” and “good” (excellent, very good and good). The proportion of PWD who responded “poor/fair” was assessed and mapped using a quintile distribution. Adjusted by age and using the 2000 US Census, rural counties situated around the edges of the state had the highest proportion (>47%) of PWD reporting fair/poor health within the last 30 days. Half the counties in the highest quintile for poor health were situated in southern Iowa (Figure 3).

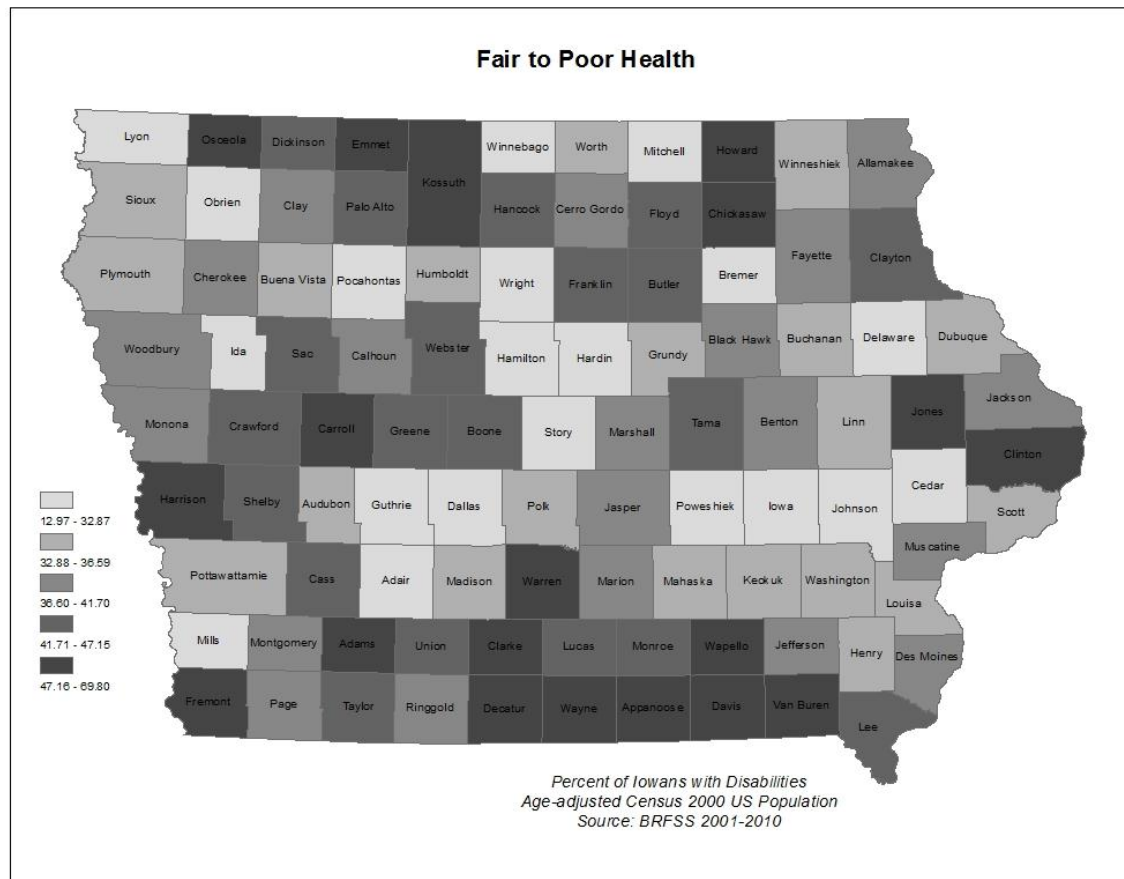


Figure 3: Age-adjusted Prevalence of Fair/Poor Health among PWD by County, BRFSS 2001-2010

High Blood Pressure

Participants were asked in the core questionnaire “Have you EVER been told by a doctor, nurse or other health professional that you have high blood pressure (HBP)?” (If “yes” and respondent is female, ask “Was this only when you were pregnant?”). The possible answers were “yes,” “yes, but [female told] only during pregnancy,” “no,” “told borderline high or pre-hypertensive,” “don’t know/not sure,” or refused. The “don’t know/not sure; refused” were set as missing and excluded from the analysis. The valid answers were split into two types, ‘1’ if participants only said “yes” and ‘0’ for all the other responses. The proportion of PWD who responded affirmatively to having been told they had high blood pressure was assessed and mapped using quintile distribution.

The distribution of age-adjusted high blood pressure prevalence among PWD showed no specific clustering. However, it seems counties in the highest quintile were located around the edges of the state and in north central and eastern regions of Iowa (Figure 4).

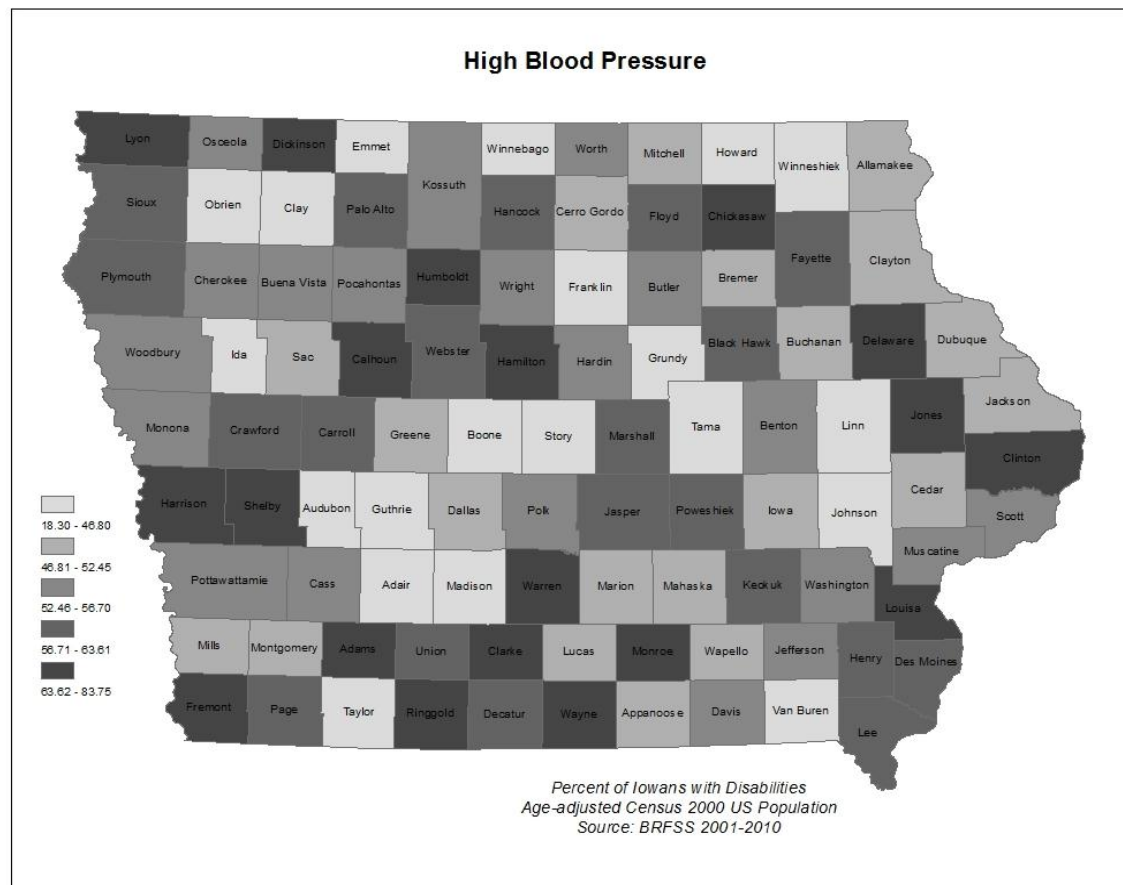


Figure 4: Age-adjusted Prevalence of High Blood Pressure among PWD by County, BRFSS 2001-2010

Coronary Heart Disease

The BRFSS asked in its core survey question about angina or coronary heart disease. Participants were asked “Have you ever been told by a doctor, nurse or other health professional that you have had angina or coronary heart disease (CHD)?” The possible answers were “yes,” “no,” “don’t know/not sure,” or refused. The “don’t know/not sure” and refused were set as missing and excluded from the analysis. The valid answers were split into two types, “1” if they only said “yes” and “0” for all the other responses. The proportion of PWD who responded “yes” was assessed and mapped using a quintile distribution.

The distribution of age-adjusted high blood pressure prevalence among PWD showed one moderate cluster in the southern counties but nothing specific in the other regions of the state (Figure 5).

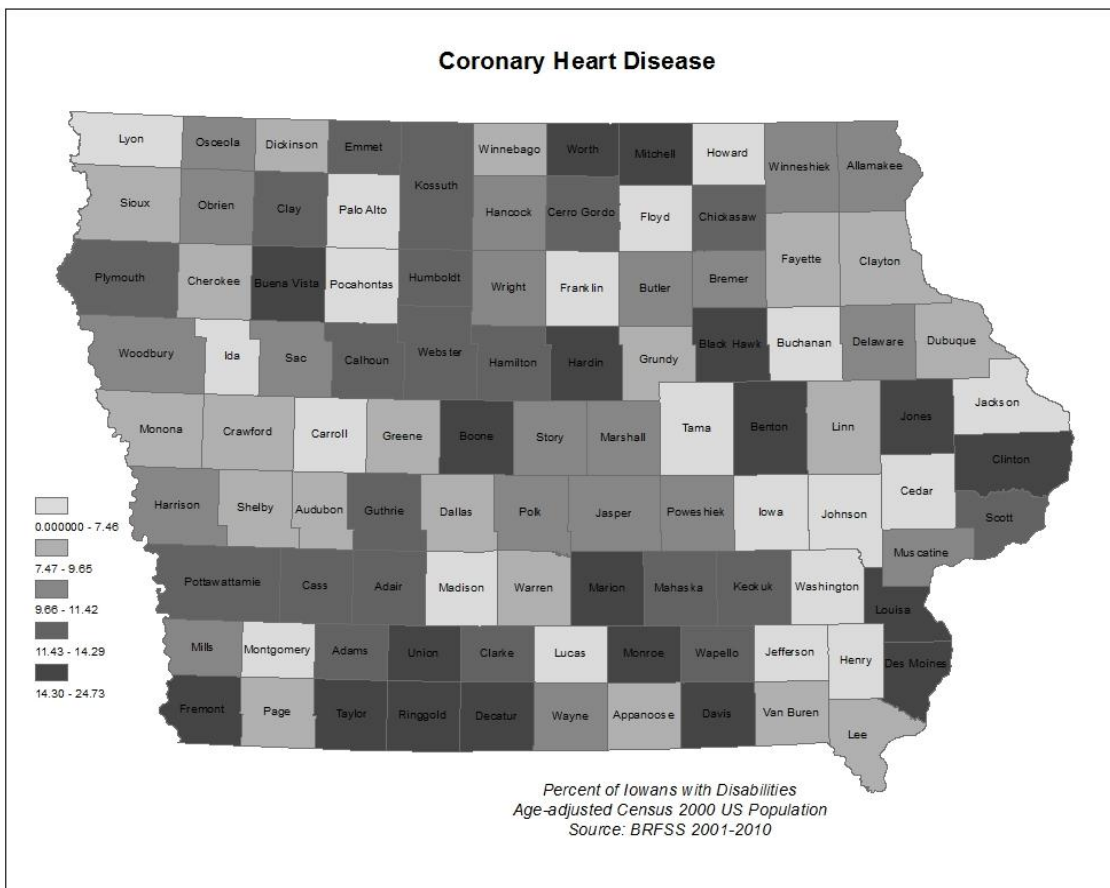


Figure 5: Age-adjusted Prevalence of Coronary Heart Disease among PWD, BRFSS 2001-2010

Stroke

Participants were asked the following question about stroke *“Have you ever been told by a doctor, nurse or other health professional that you have had a stroke?”* The possible answers were “yes,” “no,” “don’t know/not sure,” or refused. The “don’t know/not sure” and refused were set as missing and excluded from the analysis. The valid answers were split into two types, “1” if participants responded affirmatively and “0” otherwise. The proportion of PWD who responded affirmatively to having been told they had a stroke was assessed and mapped using a quintile distribution.

The distribution of age-adjusted stroke prevalence among PWD showed one small cluster in the southern counties but nothing specific in the other regions of the state (Figure 6).

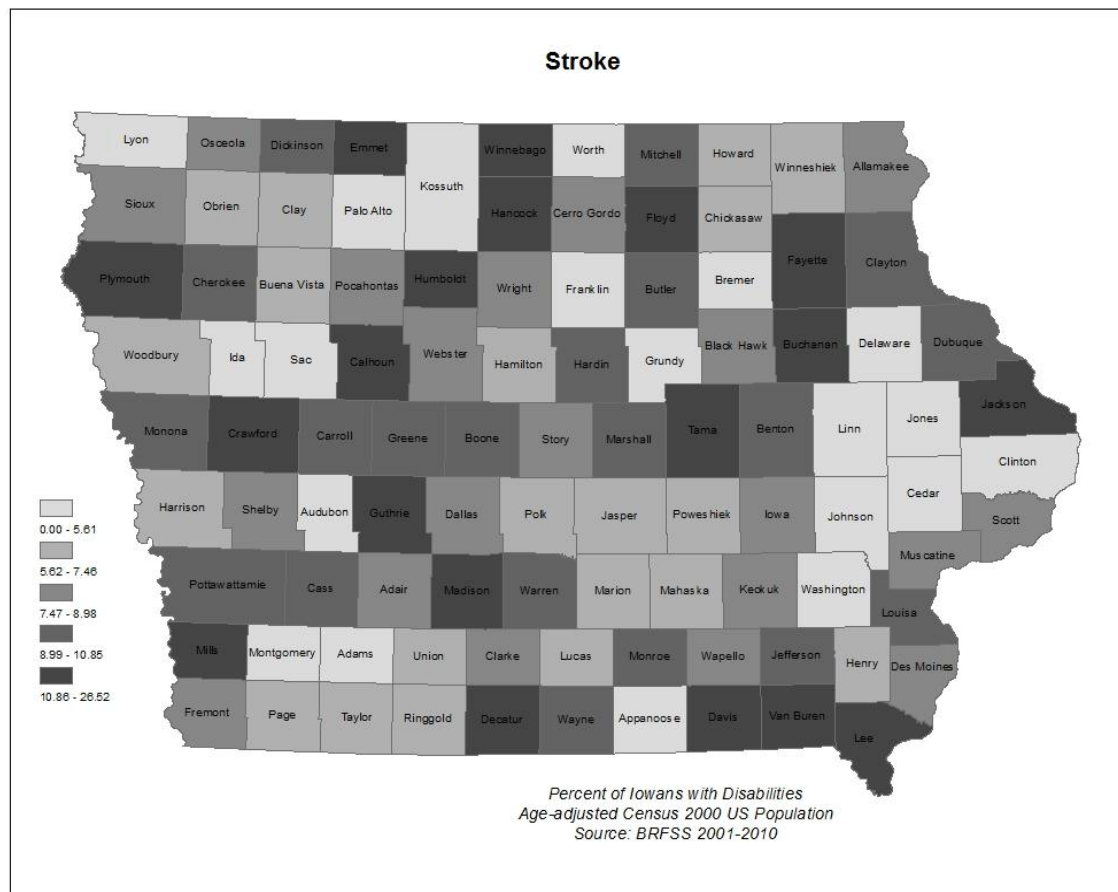


Figure 6: Age-adjusted Prevalence of Stroke among PWD by County, BRFSS 2001-2010

Diabetes

Participants were asked the following question about diabetes in the core BRFSS *“Have you ever been told by a doctor, nurse or other health professional that you have had diabetes?”* The possible answers were “yes,” “no,” “don’t know/not sure,” or refused. The “don’t know/not sure” and refused were set as missing and excluded from the analysis. The valid answers were split into two types, “1” if responded “yes” and “0” for all the other responses. The proportion of PWD who responded “yes,” they had diabetes, was assessed and mapped using a quintile distribution.

The distribution of age-adjusted diabetes prevalence among PWD showed a nine-county cluster spreading from the central region to the western region counties (Figure 7).

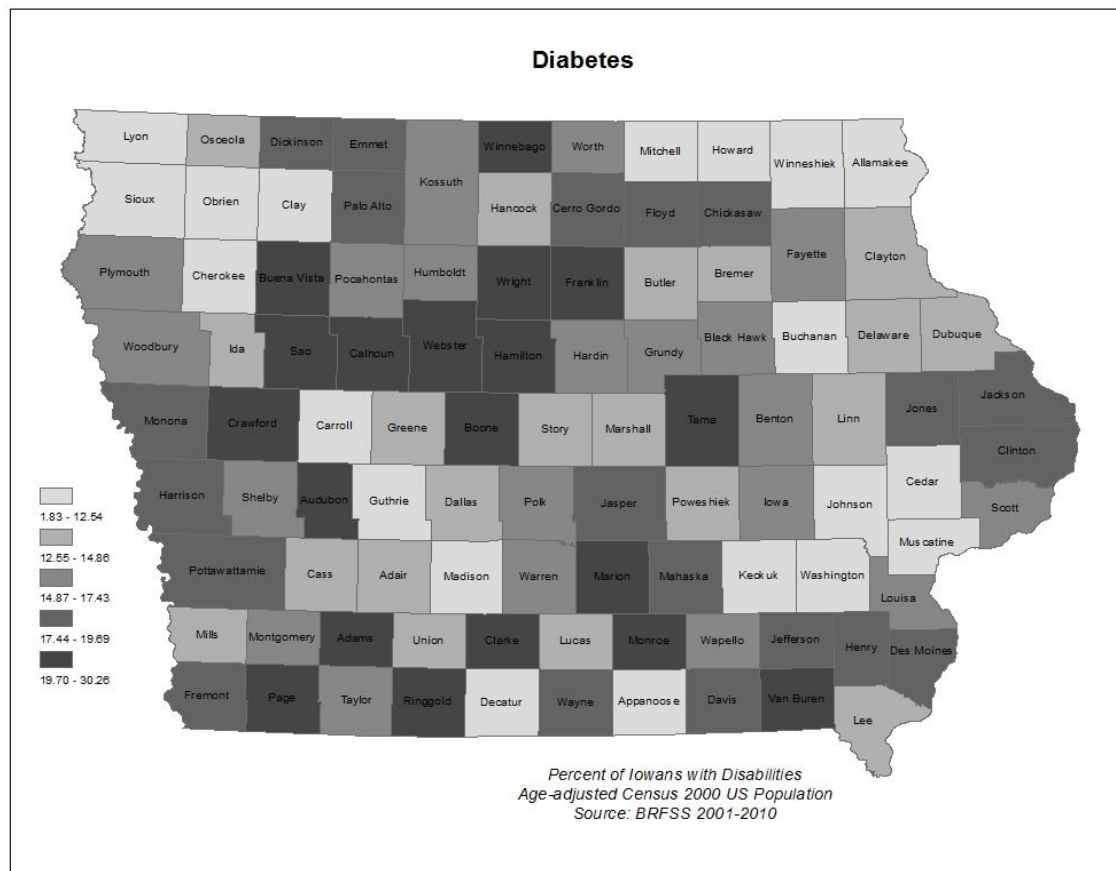


Figure 7: Age-adjusted Prevalence of Diabetes among PWD by County, BRFSS 2001-2010

Arthritis

In its core survey question about arthritis, BRFSS participants were asked *“Have you been told by a doctor, nurse or other health professional you have some form of arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia? (Arthritis diagnoses include: rheumatism, polymyalgia rheumatic, osteoarthritis, tendonitis, bursitis, bunion, tennis elbow; carpal tunnel syndrome, tarsal tunnel syndrome; joint infection, etc.)”* The possible answers were “yes,” “no,” “don’t know/not sure,” or refused. The “don’t know/not sure” and refused were set as missing and excluded from the analysis. The valid answers were

split into two types, “1” if they responded “yes” and “0” for all the other responses. The proportion of PWD who responded ever having been told they had diabetes was assessed and mapped using a quintile distribution.

The distribution of age-adjusted arthritis prevalence among PWD showed some small clusters in eastern and central as well as one mega cluster spreading in the southern regional counties (Figure 8).

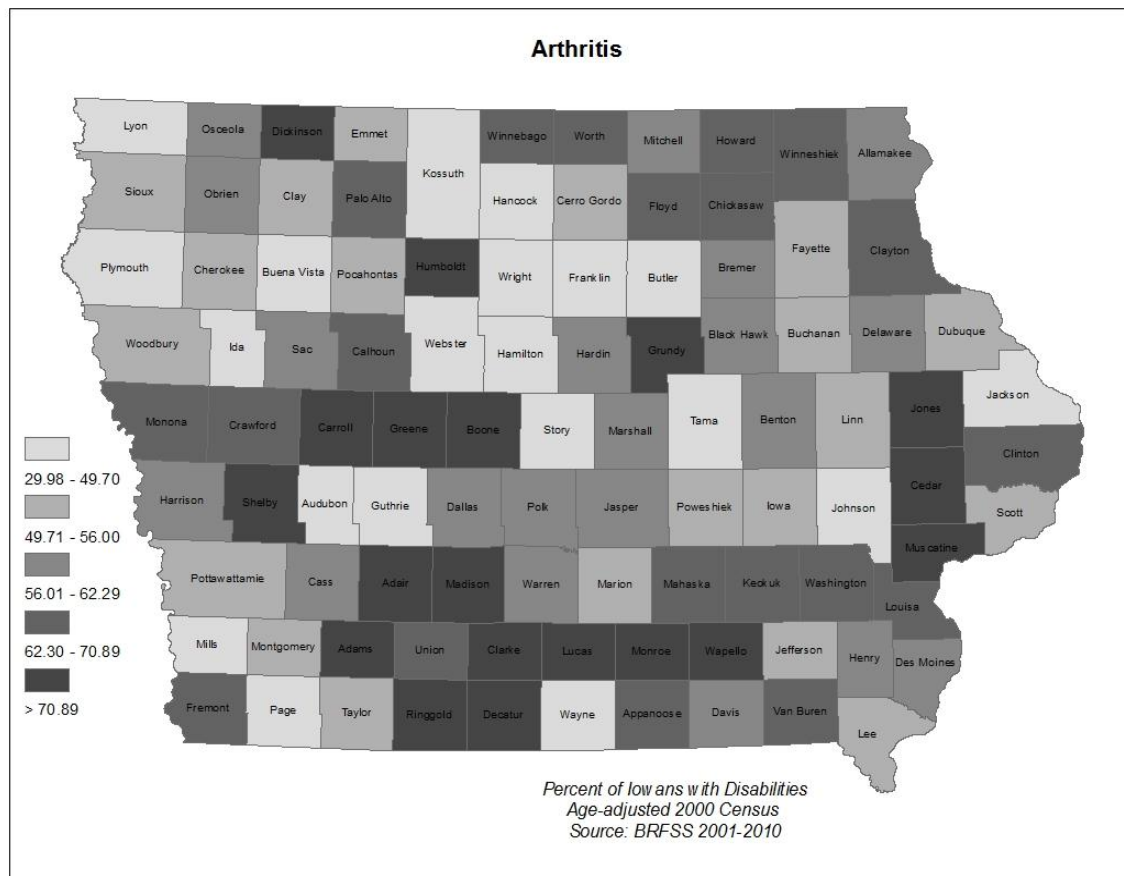


Figure 8: Age-adjusted Prevalence of Arthritis among PWD, BRFSS 2001-2010

Chronic Disease Composite Score

For chronic diseases, the composite score combined the scores from the county rankings on fair/poor health, high blood pressure, coronary heart disease, stroke, diabetes, and arthritis. The county composite score were mapped using a quintile distribution.

Counties in the highest quintile had the highest combined ranking scores (range 6 to 14) and were considered as areas of highest chronic disease need among PWD. Most counties were located in southern Iowa (Figure 9).

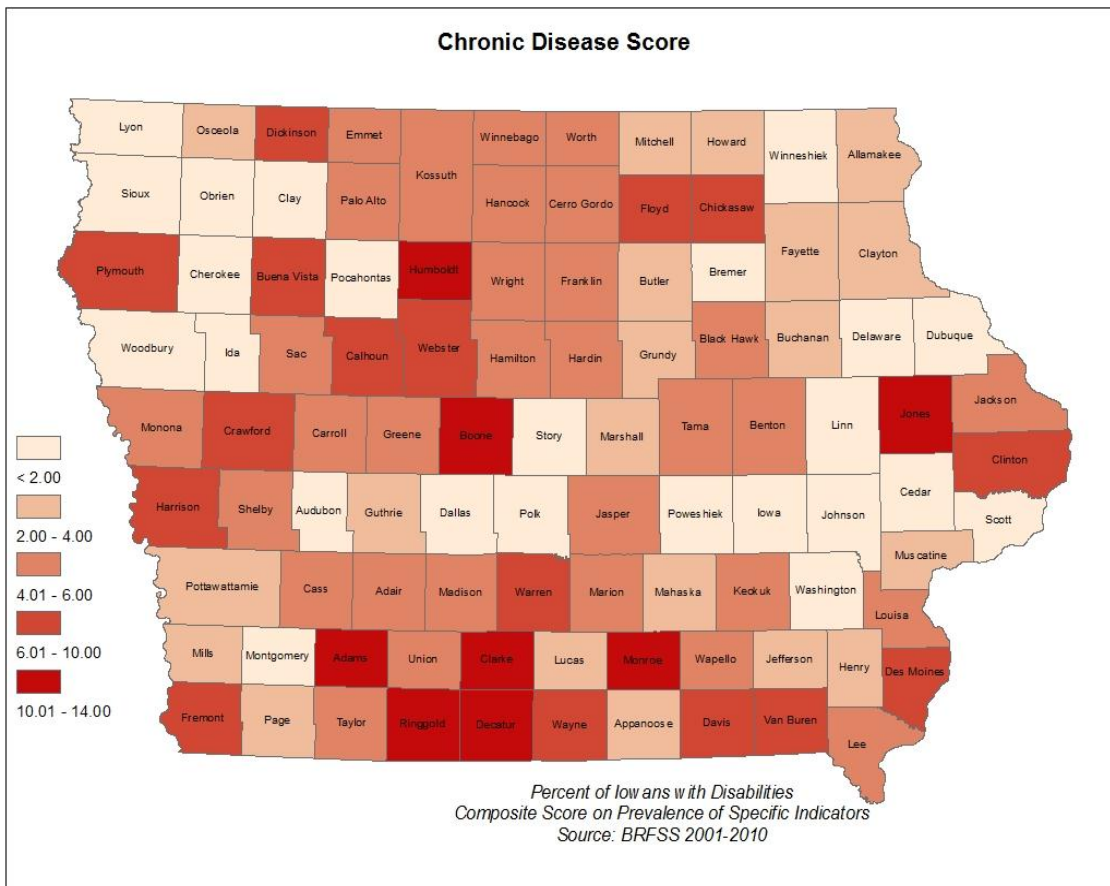


Figure 9: Counties with the Highest Chronic Disease Burden among PWD Using the Composite Ranking Score

Risk Factors

Binge drinking was defined as having 5 or more drinks (4 for females) on one occasion in the past 30 days. A current drinker was defined as having any drink of alcohol in the past 30 days. Survey participants were identified as current smokers when they reported smoking cigarettes every day or some days in the past 30 days. The physical activity indicator was considered when the respondent reported having participated in any physical activity other than work within the last 30 days. The seatbelt use indicator represented people who reported always or nearly always wearing their seatbelts. For the obesity indicator there were two classes; overweight ($25 < \text{BMI} < 30$) and obese ($\text{BMI} \geq 30$).

State Level

Among lowans, PWD were significantly more likely to be smokers, less active, or obese than PWOD. The risk for smoking was 62% higher ($\text{OR} = 1.62$) among PWD. On the positive note, the proportion of lowans reporting having attempted to quit was higher among PWD (53%) compared to PWOD (44%). The proportion of PWD who reported a BMI of 30 or more (obese) was 48% compared to 26% for PWOD. However, there was no difference in the proportion of people reporting being overweight among PWD and PWOD. Alcohol consumption percent was differently distributed than smoking. The proportion of lowans reporting being current drinkers or binge drinkers was significantly lower among PWD than among PWOD. The risk for drinking within the last 30 days was 26% lower among PWD ($\text{OR} = 0.78$) while the risk for binge drinking was 47% lower ($\text{OR} = 0.68$), (Table 8).

Compared to the nation, behavioral risk factors among PWD were not differently distributed except for the current drinkers in the 45-64 years of age group. In this age group, half of lowans with disabilities reported drinking alcohol in the last 30 days compared to 45% nationally (Table 9).

Table 8: Differences in Risk Factors among lowans by Disability Status, BRFSS 2011

Indicator (year)	PWD	PWOD	Risk Ratio	P. Value
Drank alcohol in the past 30 days (2011)	50.4	64.50	0.78	0.00
Binge drank in the past 30 days (2011)	17.7	25.9	0.68	0.00
Current smoker (2011)	30.8	19.0	1.62	0.00
Smokers who attempted to quit in the past 12 months (2011)	52.9	43.9	1.21	0.07
Inactive (2011)	34.0	24.5	1.39	0.00
Always use a seatbelt (2011)	88.3	86.2	1.02	0.17
Obese (2011)	37.5	25.9	1.45	0.00
Overweight (2011)	31.4	36.5	0.86	0.02

Table 9: Percent of PWD by Risk Factors and Demographics for Iowa and the US, BRFSS 2011

Demographics	18 - 44	45 - 64	65+	Male	Female	White
Alcohol Use in Past 30 Days						
Iowa	55.4 (±7.1)	50.3 (±4.5)	35.0 (±3.8)	58.2 (±6.2)	44.2 (±5.3)	50.1 (±4.4)
US	54.4 (±1.2)	44.5 (±0.8)	33.8 (±0.7)	54.1 (±1.1)	42.9 (±0.9)	50.2 (±0.8)
Binge Drinking in Past 30 Days						
Iowa	23.5 (±6.3)	15.0 (±3.3)	4.1 (±1.8)	12 (±4.0)	24.4 (±5.8)	17.1 (±3.6)
US	23.0 (±1.0)	11.4 (±0.5)	3.3 (±0.3)	11.7 (±0.7)	21.4 (±1.0)	16.9 (0.7)
Smoking Status - Current Smoker						
Iowa	38.8 (±7.1)	29.1 (±4.2)	8.5 (±2.7)	33 (±6.2)	28.9 (±5.2)	30.5 (±4.3)
US	35.7 (±1.2)	28.7 (±0.7)	9.6 (±0.8)	31.6 (±1.1)	27.1 (±0.8)	30.8 (±0.8)
Body Mass Index Category - Obese						
Iowa	32.7 (±6.9)	46.5 (±4.6)	36.5 (±3.9)	35.6 (±5.8)	39.5 (±5.4)	37.7 (±4.3)
US	35.7 (±1.2)	43.1 (±0.8)	33.6 (±0.7)	36.2 (±1.1)	38.8 (±0.9)	36 (±0.8)

Source: <http://dhds.cdc.gov/profiles>

County Level

For the county assessment of behavioral risk factors, the indicators selected were those significantly different for PWD compared to PWOD.

Binge Drinking

The core BRFSS included several questions about drinking behaviors. The analysis at the county level was limited to the binge drinking question. BRFSS participants were asked, *“Considering all types of alcoholic beverages, how many times during the past 30 days did you have 5 or more drinks for men or 4 or more drinks for women on an occasion?”* with the possible responses being from “0” to “76”. Current binge drinking was defined as having responded one time or more.

The distribution of age-adjusted binge drinking prevalence among PWD showed several small clusters in eastern and central regions of the state (Figure10).

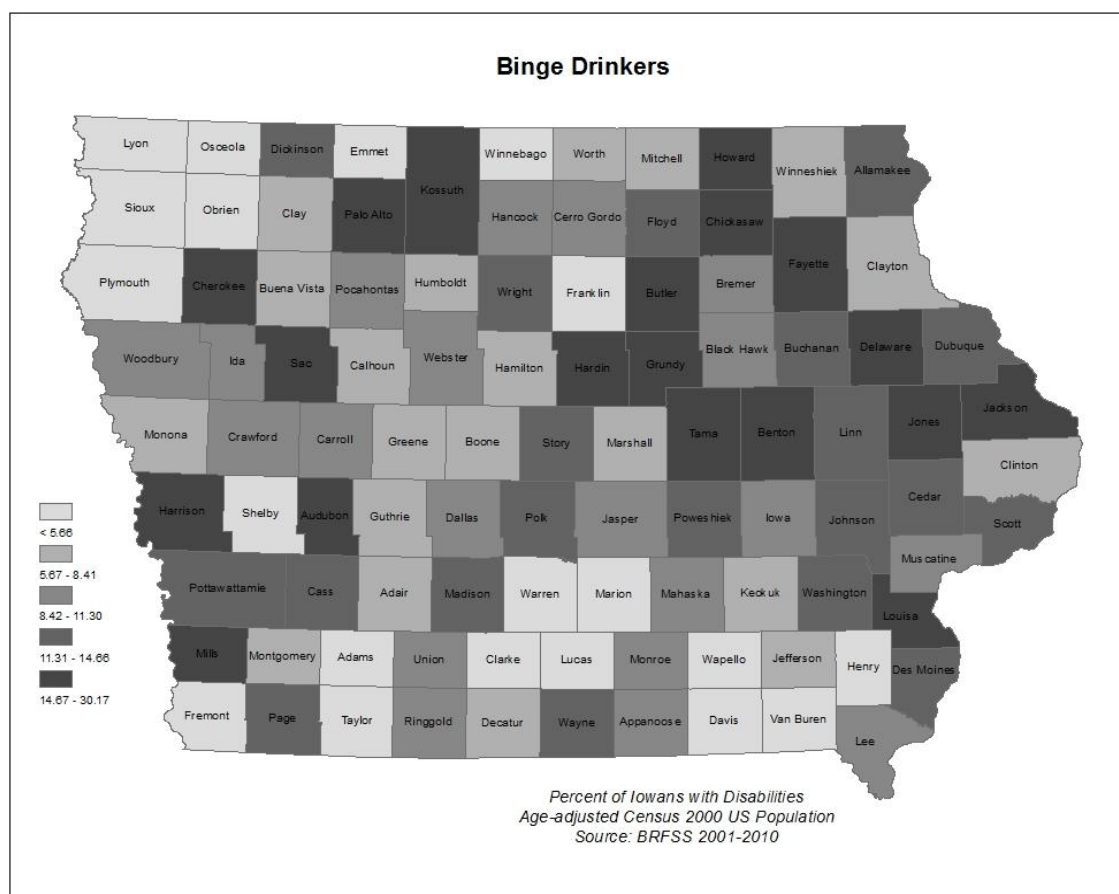


Figure 10: Age adjusted Prevalence of Binge Drinking among PWD by County, BRFSS 2001-2010

Smoking

In its core survey, BRFSS included several questions about smoking. To determine the current smoking level, participants were asked *“Have you smoked at least 100 cigarettes in your entire life?”* with the possible responses being “yes,” “no,” “don’t know/not sure,” or refused. When the participant didn’t answer “no”, they were asked a follow-up question *“Do you now smoke cigarettes every day, some days, or not at all?”* The possible answers were “every day,” “some days,” “not at all.” The “don’t know/not sure” and refused were set as missing and excluded from the analysis. The valid answers were split into two types; “1” if they responded affirmatively and “0” for all the other responses. Current smoking was defined as smoking at least 100 cigarettes in a lifetime and smoking every day or some days during the past 30 days.

The distribution of the age-adjusted prevalence of smoking among PWD showed some small clusters in eastern and central regions as well as one mega cluster spreading in the southern regional counties (Figure 11).

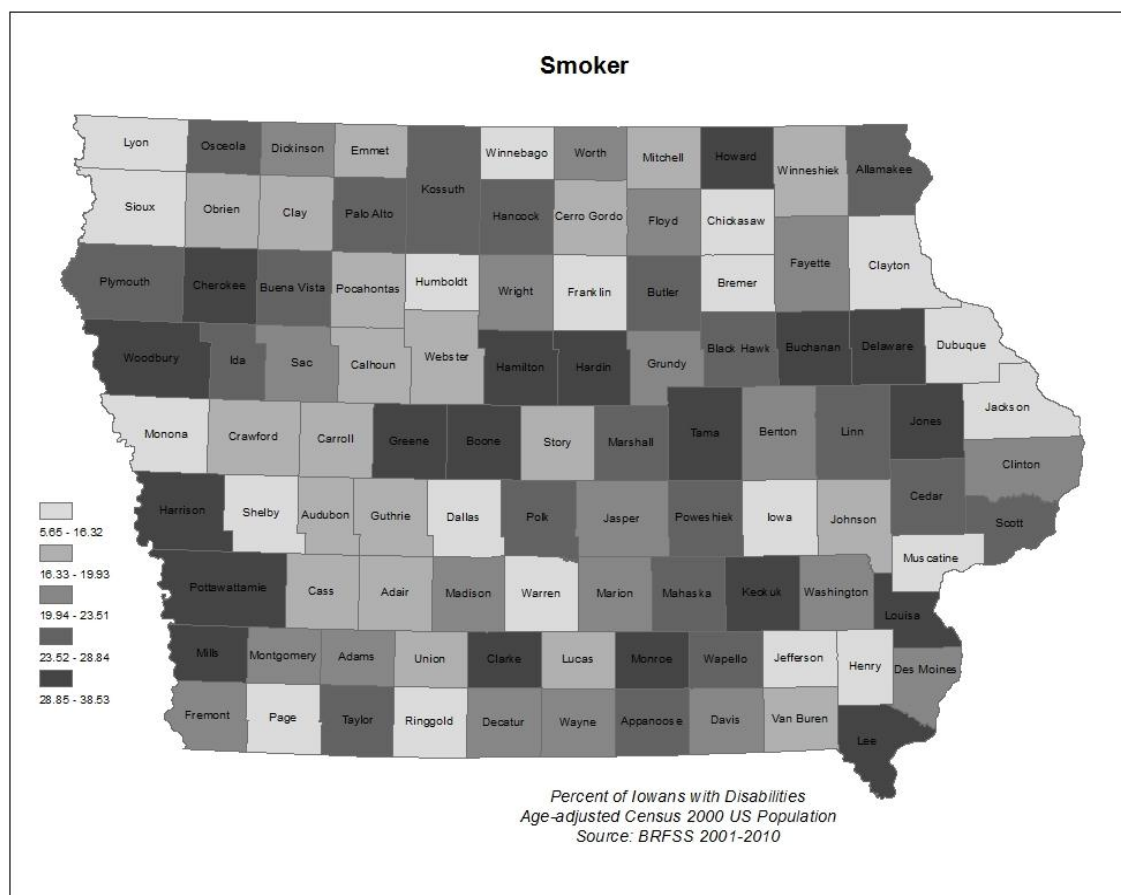


Figure 11: Age-adjusted Prevalence of Cigarette Smoking among PWD by County, BRFSS 2001-2010

No Physical Activities

In its core survey, BRFSS included several questions about physical activities. Those questions were combined in such a way that they provide researchers with a comprehensive picture of physical activity types, frequency, and intensity. For the purpose of this county assessment, the calculated leisure time variable, which represents *“Adults that report doing physical activity or exercise during the past 30 days other than their regular job,”* was used to identify PWD who did not engage in leisure time physical activities.

The distribution of age-adjusted prevalence of no leisure time physical activities among PWD showed some major clusters in the southern and north central regions of the state (Figure 12).

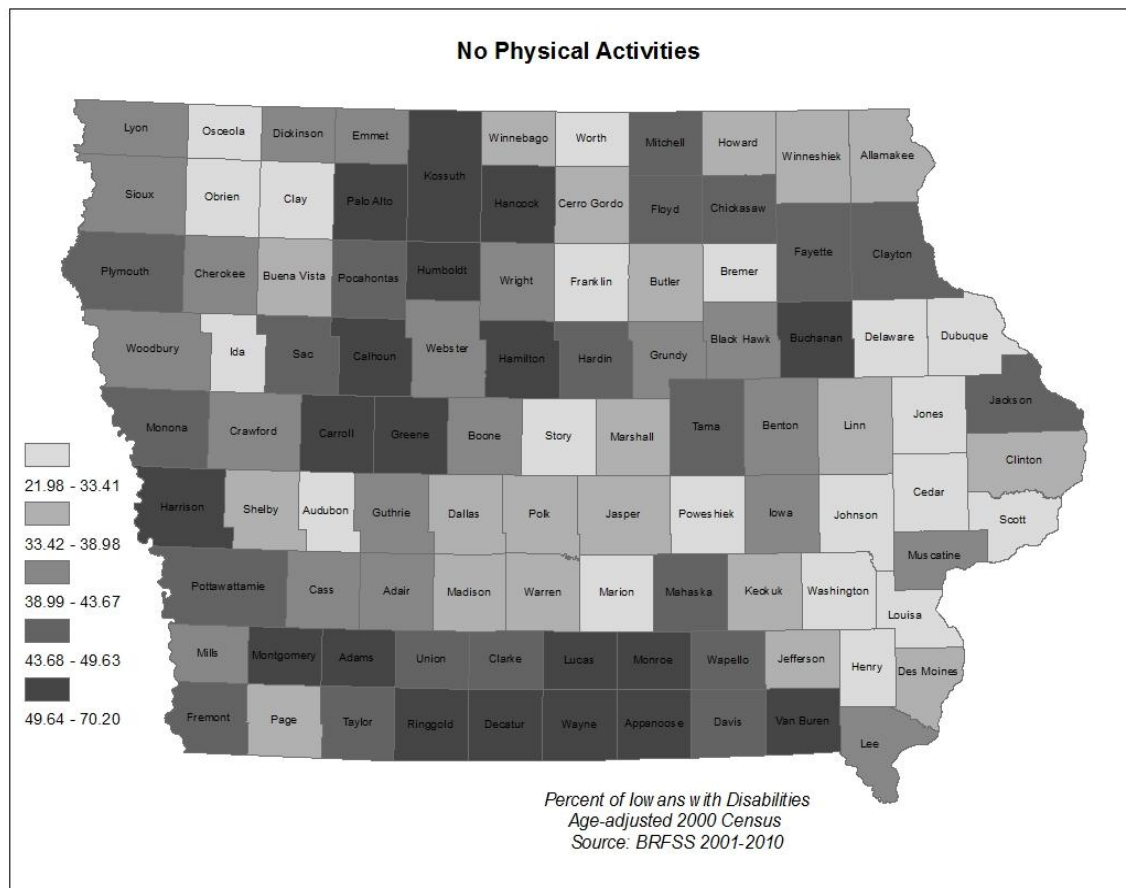


Figure 12: Age-adjusted Prevalence of Physical Inactivity by County among PWD, BRFSS 2001-2010

Not Always Using Seatbelts

In its core survey, one BRFSS question concerned the use of seatbelt. Participants were asked, “How often do you use seat belts when you drive or ride in a car?” The possible responses were “always,” “nearly always,” “sometimes,” “seldom,” “never,” “don’t know/not sure,” “never drive or ride in a car,” and refused. The “always” and “nearly always” responses were combined into one group (always wearing seatbelts) and “sometimes,” “seldom,” and “never” into another group (not always wearing seatbelts). The “don’t know” and refused responses were set as missing. For the purpose of this county assessment, the proportion of PWD categorized as always wearing seatbelts was assessed and plotted using a quintile distribution.

The distribution of age-adjusted prevalence of not always using seatbelts among PWD showed small clusters in the northern region of the state (Figure 13).

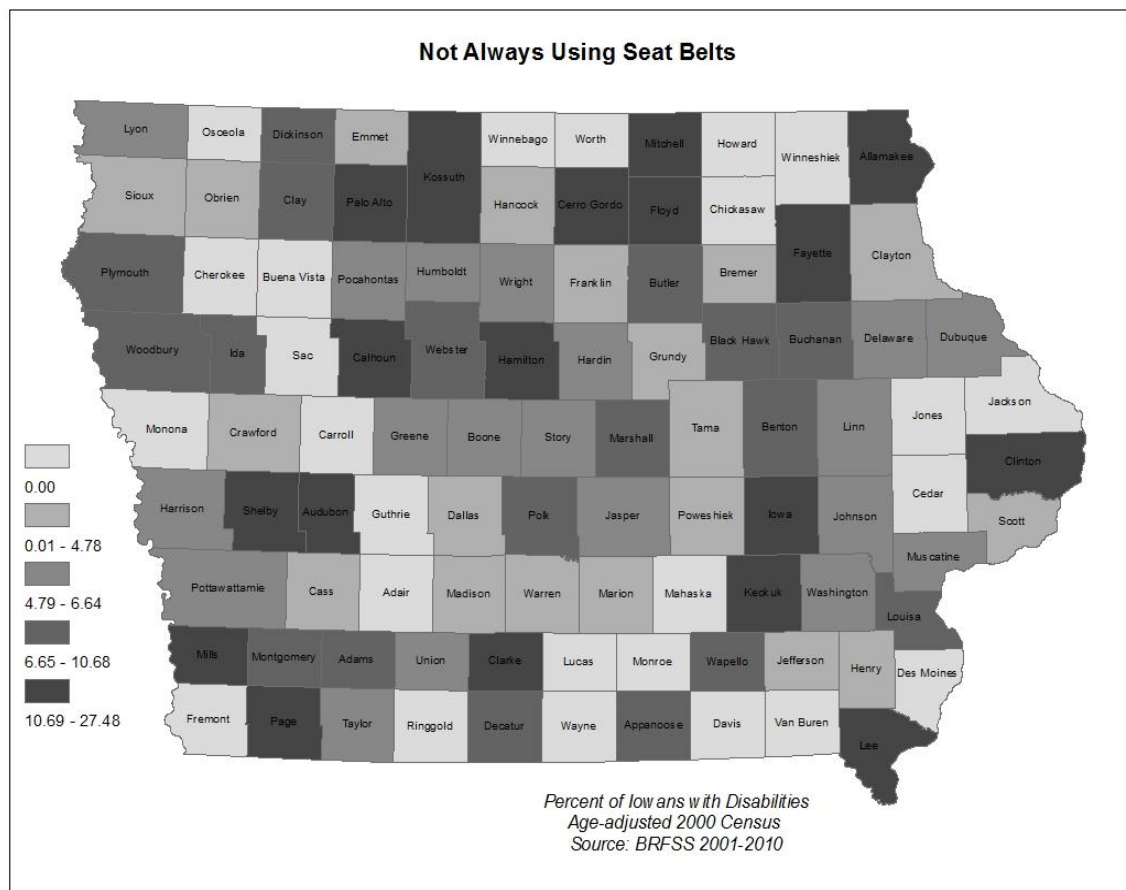
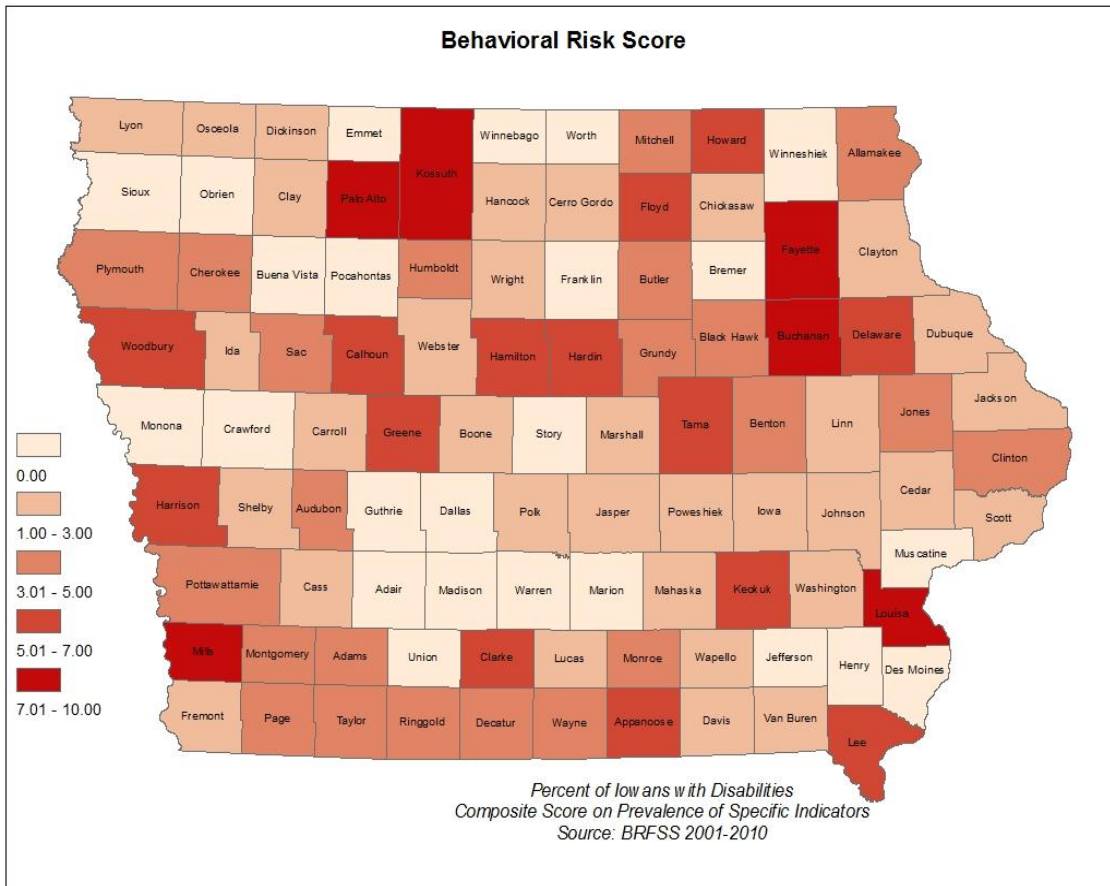


Figure 13: Age-adjusted Prevalence of Not Always Using Seat Belts among PWD, BRFSS 2001-2010

For the behavioral health risk factor indicators, the composite score combined the scores from the county rankings on binge drinking, smoking, lack of physical activities, and not always using a seatbelt. Counties that have the highest combined ranking scores (range 7 to 10) were considered areas of highest need for behavioral health risk prevention among PWD.



Access to Services

PWD have a greater risk for chronic conditions than the general population and are more likely to engage in health-risk behaviors such as smoking and lack of physical activities. Despite being at risk, research demonstrates that PWDs are less likely to have access to primary preventive healthcare services either because of lack of insurance, money, or even basic transportation when compared with the general population.⁵ The ACS assessed whether participants had health insurance, were beneficiaries of the Federal Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) and how many children in a given household were receiving a free or reduced lunch (FRL).

State Level

General Population (ACS and BRFSS)

Table 10, generated from ACS, shows the total number and percent of PWD and PWOD who have private health insurance, receive WIC, and have at least one child in the FRL program comparing Iowa and the US. According to the ACS, PWD were less likely to report having private health insurance. Compared to the US in general, Iowans had a higher proportion of PWD who were privately insured. Furthermore, WIC and FRL assess two dimensions; pregnancy and children, and poverty at the same time. There were no significant percentage differences between PWD receiving WIC or FRL who lived in Iowa or in the rest of the country.

Table 11 shows the demographic distribution of key access indicators from BRFSS. In comparison to Iowans with disabilities and their US counterparts, there were small differences in the proportion of PWD reporting having received pneumonia vaccine, not being able to see a doctor because of cost, and having healthcare coverage. In general, Iowans had a better prospect than others in the nation. Iowans with disabilities over the age of 65 were more likely to report receiving pneumonia vaccine than the average PWD in the same age group elsewhere. Among the 18-64 age groups, females, and Non-Hispanic Whites fewer Iowans with disabilities reported not being able to see a doctor because of costs.

Table 10: Access indicators by Disability Status, ACS 2009-2012

Access	Disability	IA		US	
		N	%	N	%
Have Private Health Insurance	PWOD	1,659,747	79.1	142,895,392	68.9
	PWD	158,254	57.2	12,411,305	46.1
Receive WIC Support	PWOD	34,197	11.8	3,441,456	10.4
	PWD	1,607	8.2	202,109	8.8
Have at least One Child /Free and Reduced Lunch	PWOD	145,188	9.2	19,178,337	11.1
	PWD	18,924	7.3	1,949,608	8.1

Table 11: Demographic Distribution of Access to Services by Disability Status Comparing Iowa and US, BRFSS 2011

Demographics	18 - 44	45 - 64	65+	Male	Female	White
Cholesterol Checked in Past 5 Years - Yes						
Iowa	64.5 (±7.2)	88.0 (±3.2)	95.1 (±1.6)	70.5 (±6.2)	83.0 (±4.4)	78.4 (±4.0)
US	66.9 (±1.2)	89.7 (0.5)	95.7 (±0.3)	76.4 (±1.1)	81.5 (0.8)	79.7 (0.7)
Routine Check-up in Past Year - Yes						
Iowa	65.5 (±6.9)	76.8 (±4.0)	88.4 (±2.4)	66.2 (±6.2)	78.3 (±4.8)	74.2 (±4.1)
US	59.3 (±1.2)	73.3 (±0.7)	87.0 (±0.5)	64.7 (±1.1)	71.2 (±0.8)	66.6 (±0.8)
Ever Had Pneumonia Vaccine - Yes						
Iowa	26.0 (±6.5)	40.9 (±4.5)	80.2 (±3.1)	37.7 (±5.2)	41.1 (±5.2)	40.8 (±4.2)
US	25.0 (±1.2)	37.7 (±0.8)	75.9 (±0.7)	37.8 (±1.1)	37.1 (±0.8)	37.5 (±0.7)
Could Not See a Doctor Due to Cost in Past 12 Months - Yes						
Iowa	28.2 (±6.5)	15.2 (±3.4)		22.3 (±5.8)	18.4 (±4.5)	19.0 (±3.8)
US	36.6 (±1.2)	26.7 (±0.7)		27.3 (±1.1)	29.8 (±0.8)	26.3 (±0.8)
Have Health Care Coverage - Yes						
Iowa	80.6 (±6.2)	89.3 (±2.9)	99.3 (±0.7)	83.6 (±5.5)	88.8 (±4.2)	89.1 (±3.3)
US	74.1 (±1.2)	84.2 (±0.6)	98.3 (±0.2)	78.3 (±1.1)	83.8 (±0.7)	83.3 (0.7)
Have a Personal Doctor - None						
Iowa	20.2 (±5.9)	10.7 (±3.2)	4.3 (±2.2)	22.4 (±5.8)	7.9 (±3.3)	13.4 (±3.5)
US	26.9 (±1.1)	11.3 (±0.5)	3.6 (±0.3)	23.7 (±1.0)	13.5 (±0.7)	16.5 (±0.7)

Source: <http://dhds.cdc.gov/profiles>

County Level

No Health Insurance (ages 18-64)

In its core, BRFSS survey included question about health insurance. BRFSS participants were asked “Do you have any kind of health care coverage, including health insurance, prepaid plans such as HMOs, or government plans such as Medicare, or Indian Health Service?” with the possible responses being “yes” or “no”. The “don’t know” or refused answers were set to missing. The negative responses were considered for analysis of county level access gap. The percent of 18-64 years old who reported not having any health insurance was selected as the main indicator of lack of access to healthcare.

The distribution of age-adjusted proportion of PWD without health insurance showed a major cluster in the southern region of the state and smaller clusters in the central and western regions (Figure15).

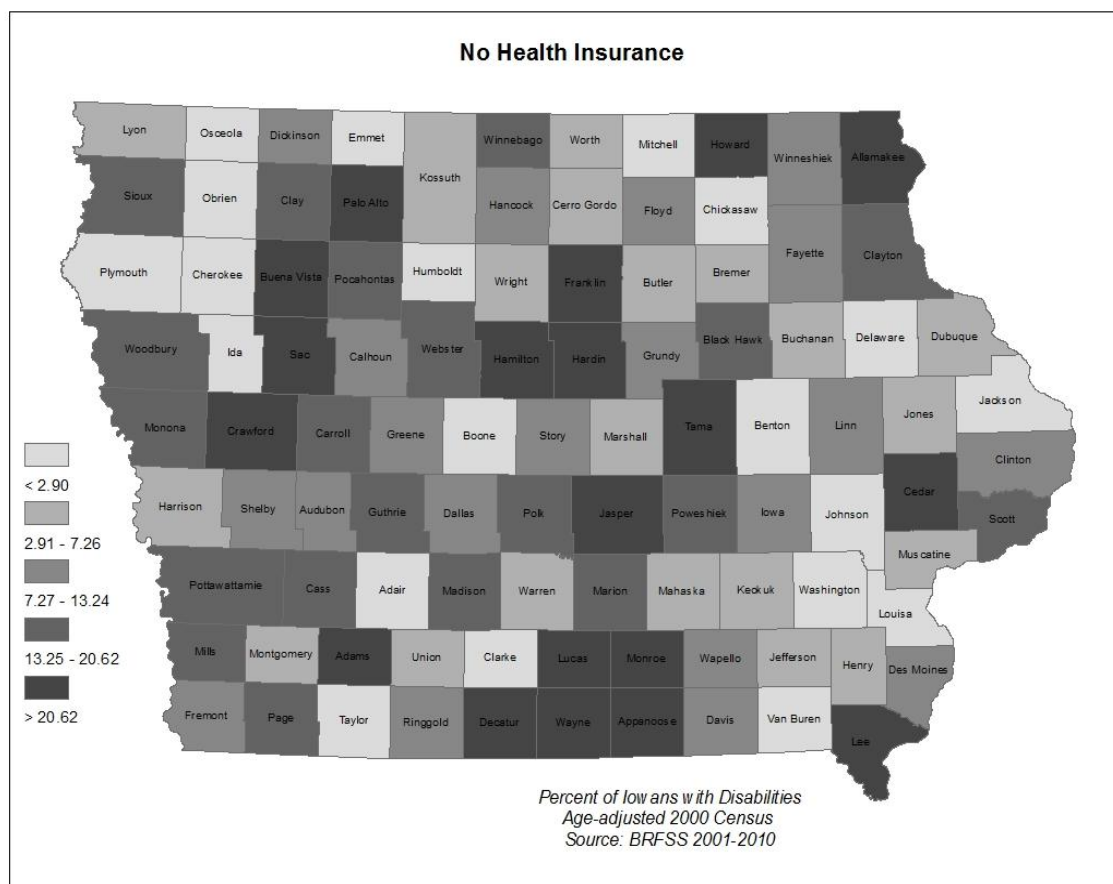


Figure 15: Age-adjusted Percent of PWD (ages 18-64) Who Reported Not Having Health Insurance, BRFSS 2001-2010

No Personal Doctor/Health Provider

In its core survey, BRFSS included questions about having a personal doctor or healthcare provider. BRFSS participants were asked “Do you have one person you think of as your personal doctor or health care provider?” If “no”, “Is there more than one or is there no person who you think of as your personal doctor or health care provider?” The possible responses were “yes,” “only one,” “more than one,” “no.” The “don’t know” and refused answers were set to missing. The negative response was considered for county level access gap analysis. The percent of PWD who reported not having any personal doctor or healthcare provider was selected as the main indicator of access gap.

The distribution of the age-adjusted proportion of PWD without a personal doctor showed a major cluster in the southeastern region of the state and smaller clusters in the northeast regions. It should be noted that the disparities were not specific to rural Iowa (Figure 16).

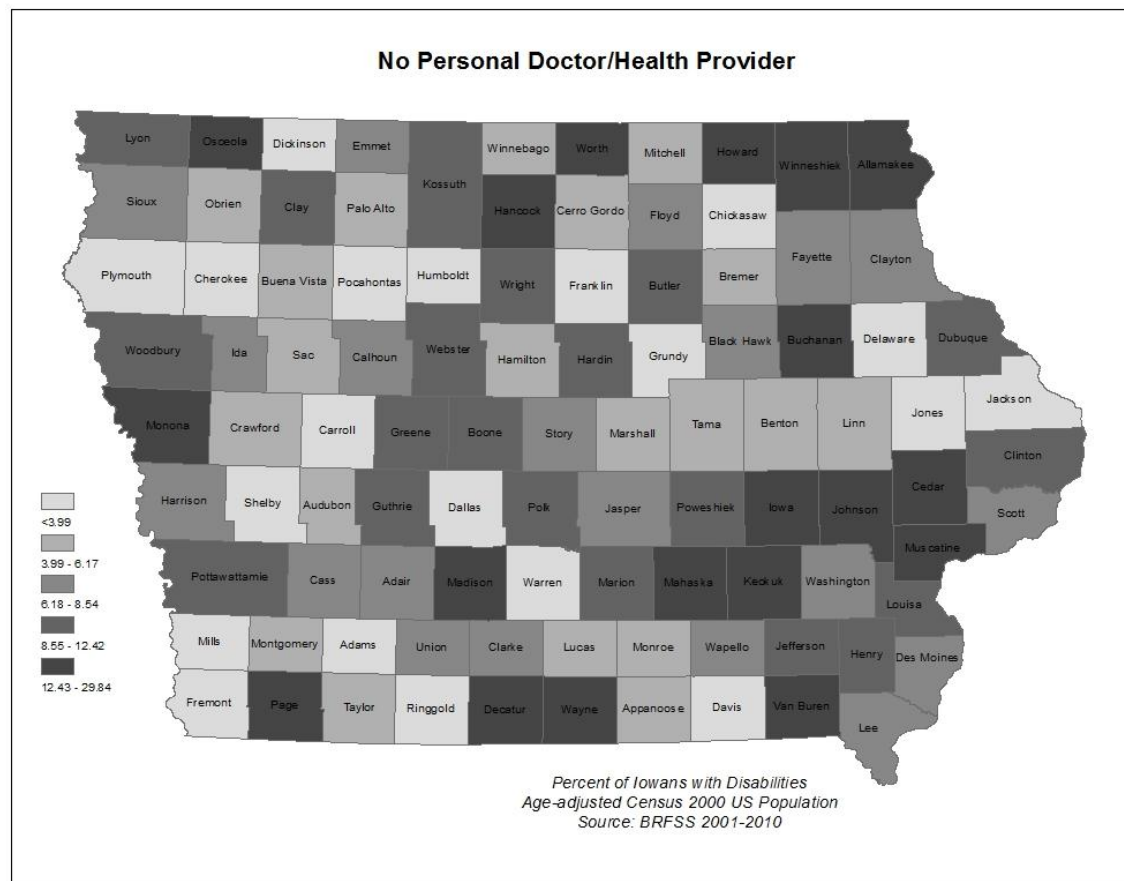


Figure 16: Age-adjusted Percent of PWD who reported Not Having a Personal Care Provider or Doctor, BRFSS 2001-2010

No Doctor Visit because of Cost

The BRFSS survey dealt with barriers to seeing a doctor such as cost of a visit. BRFSS participants were asked “*Was there a time in the past 12 months when you needed to see a doctor but could not because of cost?*” The possible responses were “yes” and “no.” The “don’t know” and “refused” answers were set to missing. The negative response was considered for county-level access gap analysis. The percent PWD who reported not seeing a doctor because of cost was selected as an indicator of access gap.

The age-adjusted proportion of PWD who didn’t visit a doctor because of cost showed a major clustering in southern Iowa along the Missouri state line (Figure 17).

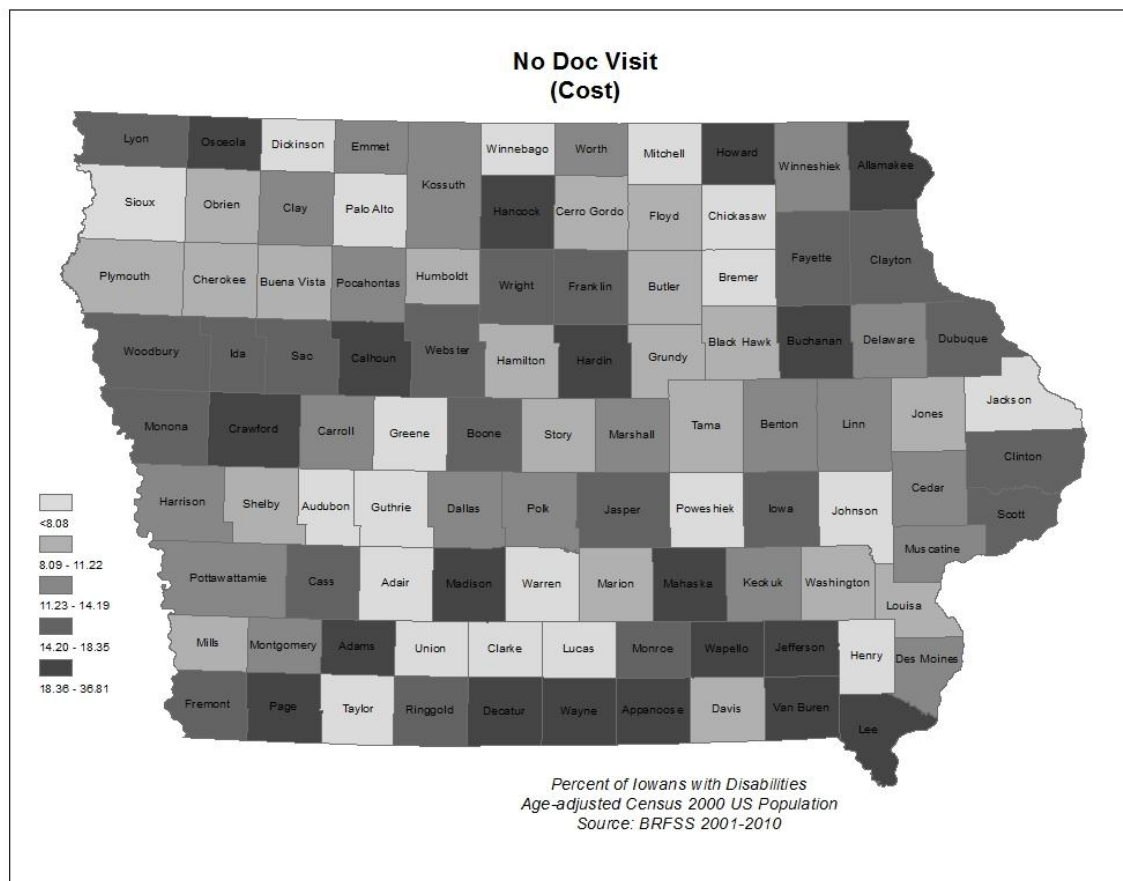


Figure 17: Age-adjusted Percent of PWD who reported Not Seeing a Doctor within the Last Year Because of Cost, BRFSS 2001-2010

No Flu Shot

The BRFSS survey included several questions about access to flu shots. BRFSS participants were asked “During the past 12 months, have you had either a seasonal flu shot or a seasonal flu vaccine that was sprayed in your nose?” The possible responses were “yes” and “no.” The “don’t know” and refused answers were set to missing. The negative response was considered for county-level access gap analysis. The indicator of access was the percent of PWD who reported not having received a flu shot in the past 12 months.

The age-adjusted proportion of PWD who didn’t receive flu shots showed no major specific clustering. Instead, counties at the edges of the state had flu vaccine access problems (Figure 18).

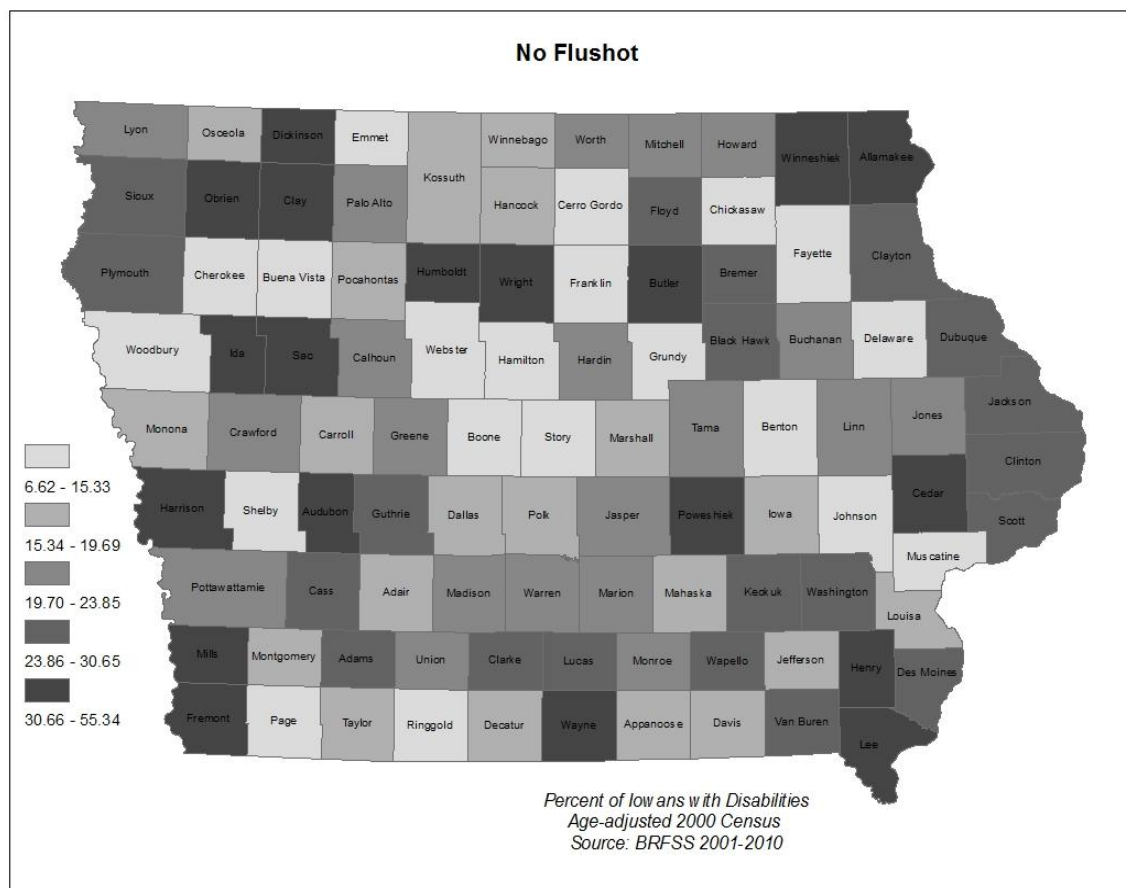


Figure 18: Age-adjusted Percent of PWD (65+) Who Reported Not Having Received Flu Shots within the Last Year, BRFSS 2001-2010

No Mammogram Test within Last Two Years

Several BRFSS questions were directed towards access to mammogram screenings. BRFSS female participants were asked two sets of questions to help determine access to mammogram screening. The first question concerned whether a participant ever had a mammogram: *“A mammogram is an x-ray of each breast to look for breast cancer. Have you ever had a mammogram?”* The follow-up question was addressed to those who responded positively to the previous question: *“How long has it been since you had your last mammogram?”* Excluding people under 40 years of age, the possible responses were combined to identify participants reporting having had a mammogram within the last two years. A negative response was considered for county-level access gap analysis. The indicator of access was the percent of PWD who reported not having received a mammogram in the past two years.

The age-adjusted proportion of females 40 years and older with disabilities who didn’t have a mammogram showed no major clustering but was spread out mostly in rural areas and closer to state borders (Figure 19).

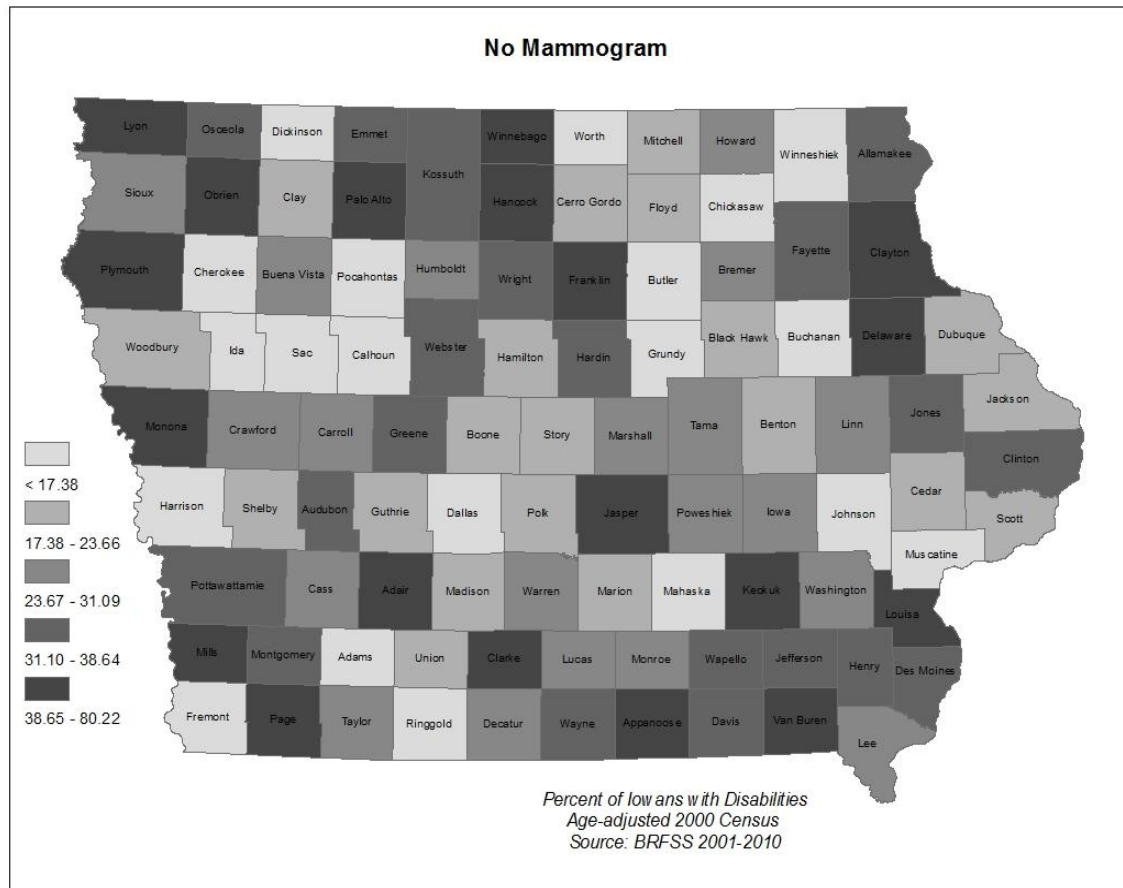


Figure 19: Age-adjusted Proportion of Iowa Females with Disabilities (40+) Who Reported Not Having Had a Mammogram within the Last Two Years, BRFSS 2001-2010

No Prostate-Specific Antigen (PSA) Test within Last Two Years

Several BRFSS questions related to access to prostate screening services. BRFSS male participants were asked two sets of questions to help determine prostate screening. The first question, “*Have you ever had a PSA test?*” was followed by “*How long has it been since you had your last PSA?*” for those who responded affirmatively to the first question. Excluding people under 40 years of age, the possible responses were combined to identify participants reporting having had a PSA test within the last two years. The negative response was considered for county-level access gap analysis. The indicator of access was the percent PWD (40 and older) who reported not having had a PSA in the past two years.

The age-adjusted proportion of Iowa men 40 years and older with disabilities who didn’t have a PSA test showed county clustering in the southern, northern, and northwestern regions of the state and mostly in rural Iowa (Figure 20).

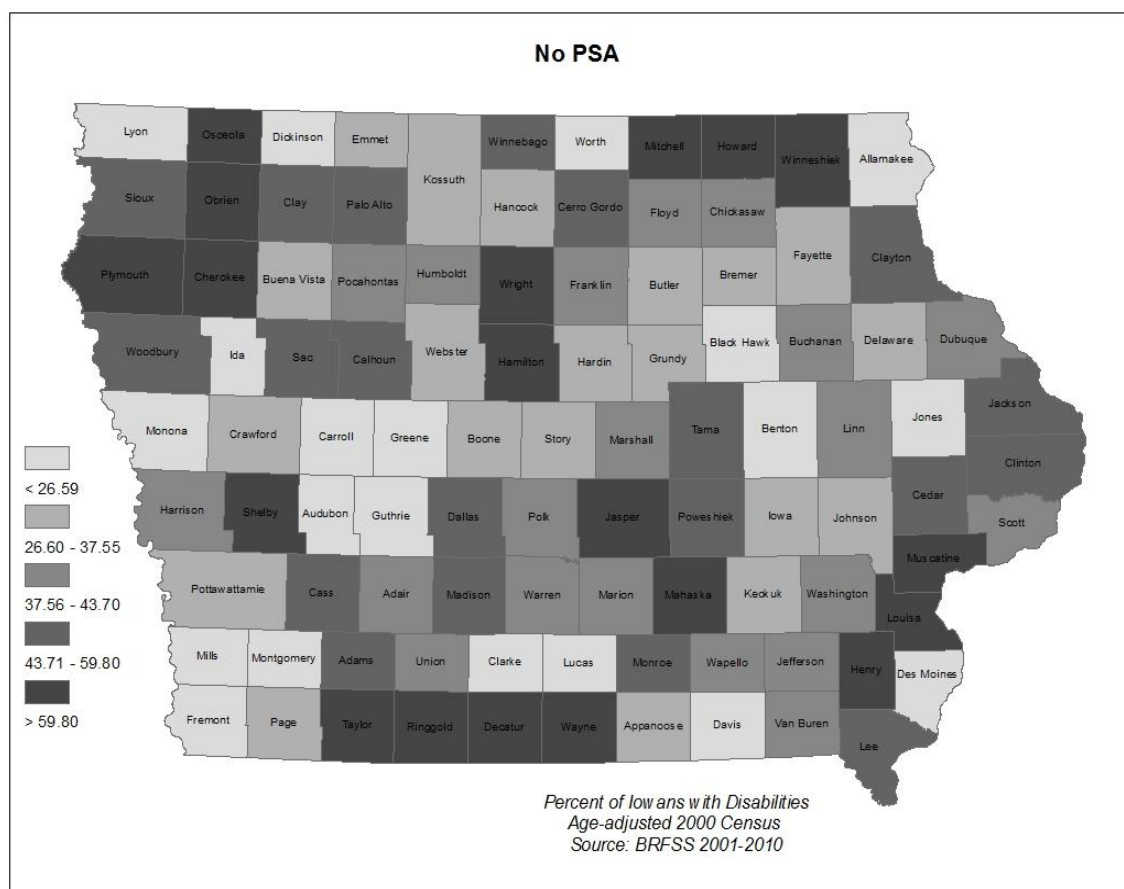


Figure 20: Age-adjusted Proportion of Male Iowans with Disabilities (65+) Who Reported Not Having Had a PSA Test within the Last Year

Never Had Sigmoidoscopy or Colonoscopy

BRFSS participants were asked two sets of questions on colorectal cancer screening. The first question concerned whether the participant ever had sigmoidoscopy or colonoscopy: “*Sigmoidoscopy and colonoscopy are exams in which a tube is inserted in the rectum to view the colon for signs of*

cancer or other health problems. Have you ever had either of these exams?" The second question related to how long ago the procedure occurred: "How long has it been since you had your last sigmoidoscopy or colonoscopy?" Excluding people under 50 years of age, the possible responses were combined to identify participants who reported having never had a sigmoidoscopy or colonoscopy.

Counties with higher age-adjusted proportion of Iowa men 50 years and older with disabilities who never had a sigmoidoscopy or colonoscopy were clustered in the southern and central-western regions of the state and mostly in rural Iowa (Figure 21).

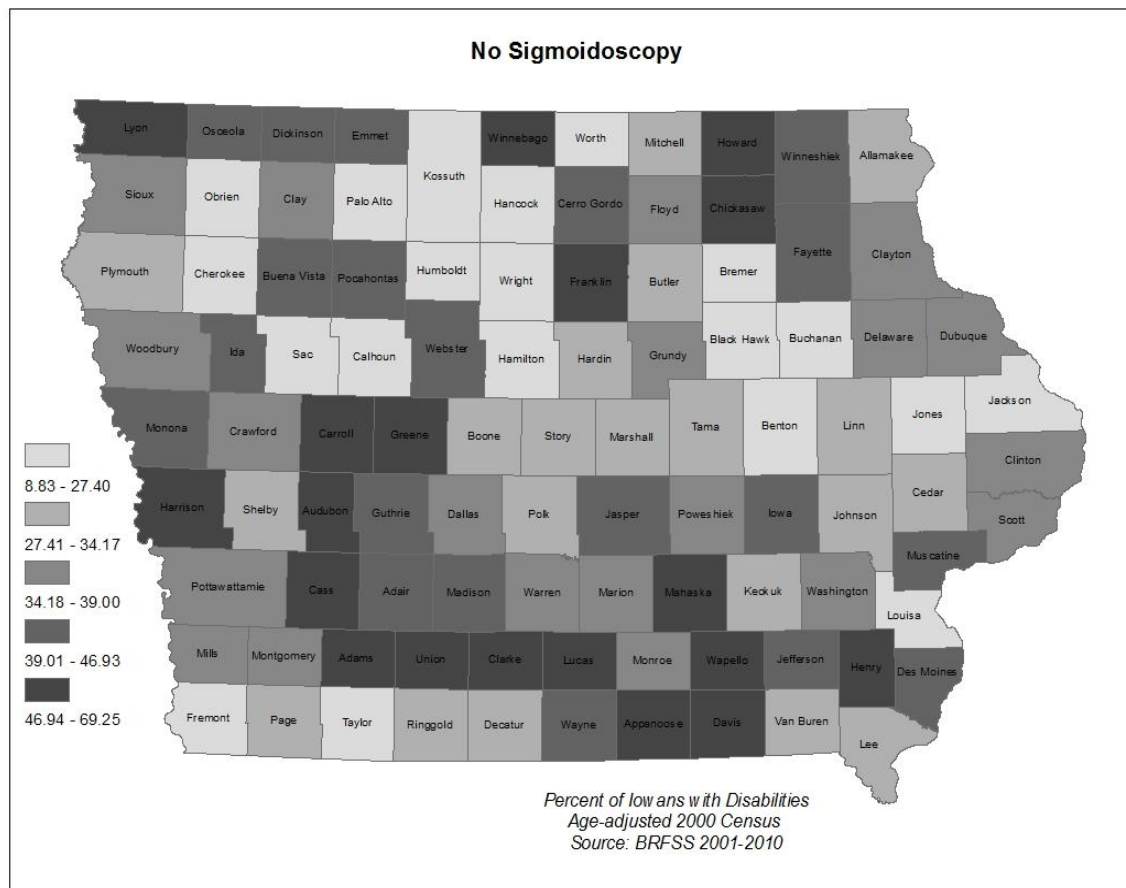


Figure 21: Age-adjusted Percent of PWD Who Reported Never Having Had a Sigmoidoscopy or Colonoscopy

Access Composite Score

A county composite score for a gap in access to services was derived by combining scores from the following: no insurance coverage, lack of personal doctor, not seeing a doctor because of cost, not receiving flu vaccine, not having mammogram or PSA test, and not having sigmoidoscopy or colonoscopy.

Counties that have the highest combined ranking scores (range 9 to 15) were considered as areas of highest access need among PWD. Most counties were located in southern Iowa and at the state periphery (Figure 22).

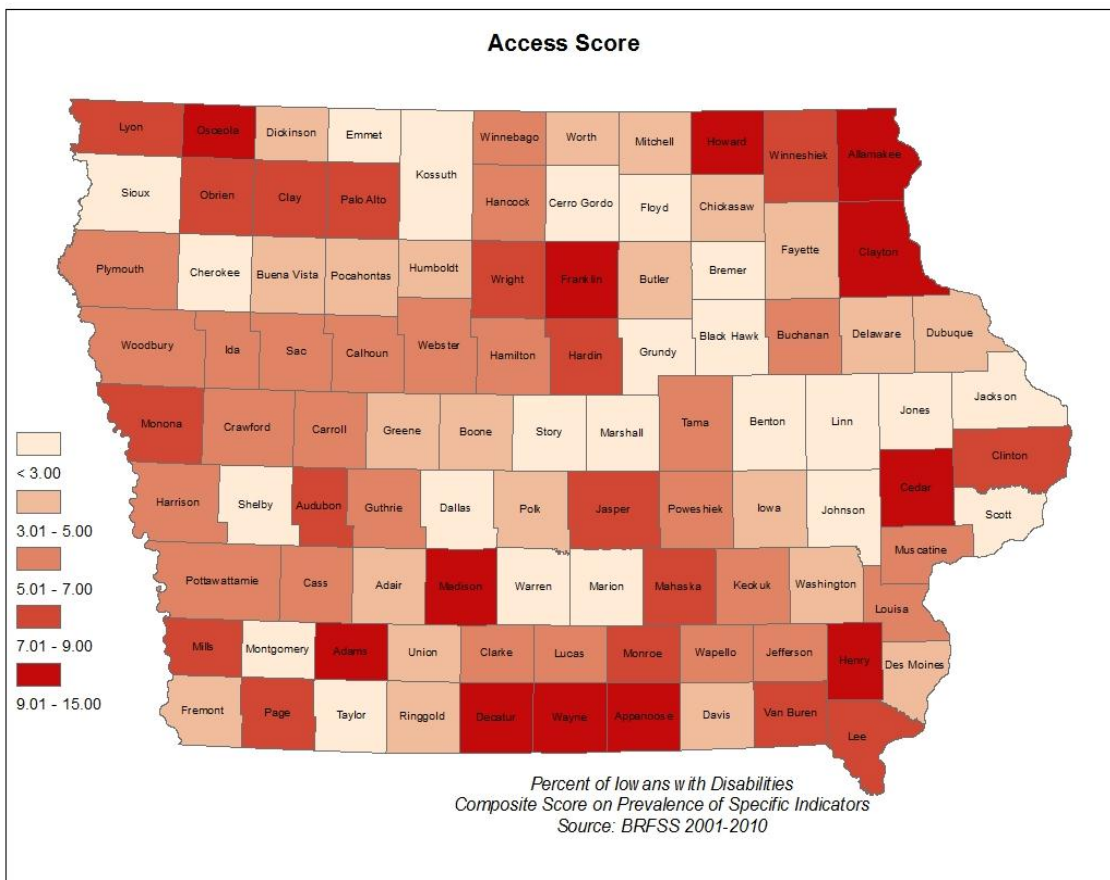


Figure 22: Counties with Highest Gap in Access to Services for PWD in Iowa, BRFSS 2001-2010

Disability Outcomes

It is generally demonstrated through empirical research that people with disabilities are more likely than people without disabilities to experience such negative socioeconomic outcomes as unemployment and, when employed, lower incomes, higher rates of poverty, and lack of a social network. Disability may be the source of negative outcomes or the consequence of those outcomes (bidirectional impact of disability). ⁵ In this report the main outcomes were: income, education, marital status, and employment (inability to work or unemployment).

State Level

According to BRFSS, when compared to PWOD, PWD were twice (OR=2.1) as likely to earn less than \$25,000; were 70% more likely to have a high school-level education or less; had the highest rate of divorce/separation or being widowed; and were 22 times more likely to report inability to work or unemployment (Table 12). Compared to the nation, PWD in Iowa were more likely to report being employed (Table 13).

Table 12: Social Outcomes among Iowans by Disability Status, BRFSS 2011

Social Outcomes		PWD %	PWOD %	Risk Ratio	P. Value
Income	<\$25000	44.7	20.9	2.1	0.00
Education	Finished some high school or less	15.4	9.0	1.7	0.00
	Graduated high school	66.7	66.7	1.0	1.00
	Graduated college	17.9	24.3	0.7	0.00
Marital Status	Married or a member of an unmarried couple	53.8	61.4	0.88	0.00
	Divorced or separated	15.8	9.7	1.63	0.00
	Widowed	7.8	5.6	1.39	0.00
	Never married	22.7	23.3	0.97	0.77
Employment	Employed	47.4	67.7	0.70	0.00
	Out of work	6.5	4.4	1.48	0.05
	Unable to work	15.8	0.7	22.57	0.00
	Other	30.3	27.2	1.11	0.10

Source: <http://dhds.cdc.gov/profiles>

Table 13: Social Outcomes among PWD in Iowa and US, BRFSS 2011

Social Outcomes	Iowa % (95%CI)	US % (95%CI)
Income Level - <\$25,000	44.7 (±3.9)	44.0 (±0.6)
Education Level - Some High School or Less	15.4 (±3.7)	18.1 (±0.6)
Marital Status - Married / Unmarried Couple	53.8 (±4.1)	49.5 (±0.7)
Employment Status - Employed	47.4 (±4.0)	39.0 (±0.7)

Source: <http://dhds.cdc.gov/profiles>

County Level (ACS, BRFSS)

Table 14 compared metro and non-metro counties by disability status. There were no major differences between PWOD and PWD except for the percent of adults who never married. About 29% of PWOD adults living in metro counties reported never having been married compared to 20% in non-metro counties.

The socioeconomic outcome disparity was much wider among PWD than among PWOD. The employment rate for PWD residing in non-metro counties was lower than those living in metro counties. However, a higher proportion of PWD in metro counties was considered below the 100% federal poverty guidelines. Not only had more PWD reported never been married (one in five) in metro counties compared to non-metro counties (one in seven), the divorce rate was much higher in metro counties.

Compared to PWOD, PWD in metro and non-metro counties had the worst socioeconomic outcomes such as the percent of people working, percent in poverty, and divorce rate.

Table 14: Socio-economic Outcomes in Metro and Non Metro Counties among Adult Iowans, ACS

OUTCOMES		Labels	NON METRO %	METRO %	P. Value
Work*	PWD	NLF	51.3	44.1	<.0001
		Working	41.8	50.6	
		Unemployed	6.8	5.3	
	PWOD	NLF	12.7	12.2	NS
		Working	82.1	82.7	
		Unemployed	5.2	5.1	
Federal Poverty Level	PWD	Poor	17.9	19.3	<.0001
		Above Poverty	82.1	80.7	
	PWOD	Poor	8.4	8.0	NS
		Above Poverty	91.6	92.0	
Marital Status	PWD	Never	16.8	20.2	<.0001
		Married	66.8	61.7	
		Divorce /Sep	16.5	18.1	
	PWOD	Never	24.0	28.7	0.0003
		Married	63.8	60.1	
		Divorce /Sep	12.2	11.3	

Note: NLF= Not in the labor force (unable to work; not actively looking for a job), adults 18+

*Working age= 21-64

Educational Attainment

The following BRFSS question in the core survey was about education attainment. This question was asked: *“What is the highest grade or year of school you completed?”* The possible responses were *“Never attended school or only kindergarten;” “grades 1 through 8 (elementary);” “grades 9 through 11 (Some high school);” “grade 12 or GED (High school graduate);” “college 1 year to 3 years (Some college or technical school);” “college 4 years or more (college graduate).”* The levels below college were collapsed into one category and college and above into another. The “don’t know” and refused responses were set as missing. For the purpose of this county assessment, the proportion of PWD who responded less than college was assessed and plotted.

The distribution of age-adjusted proportion of PWD who had high school or less education attainment showed clusters in the southern and northeastern region of the state (Figure 23).

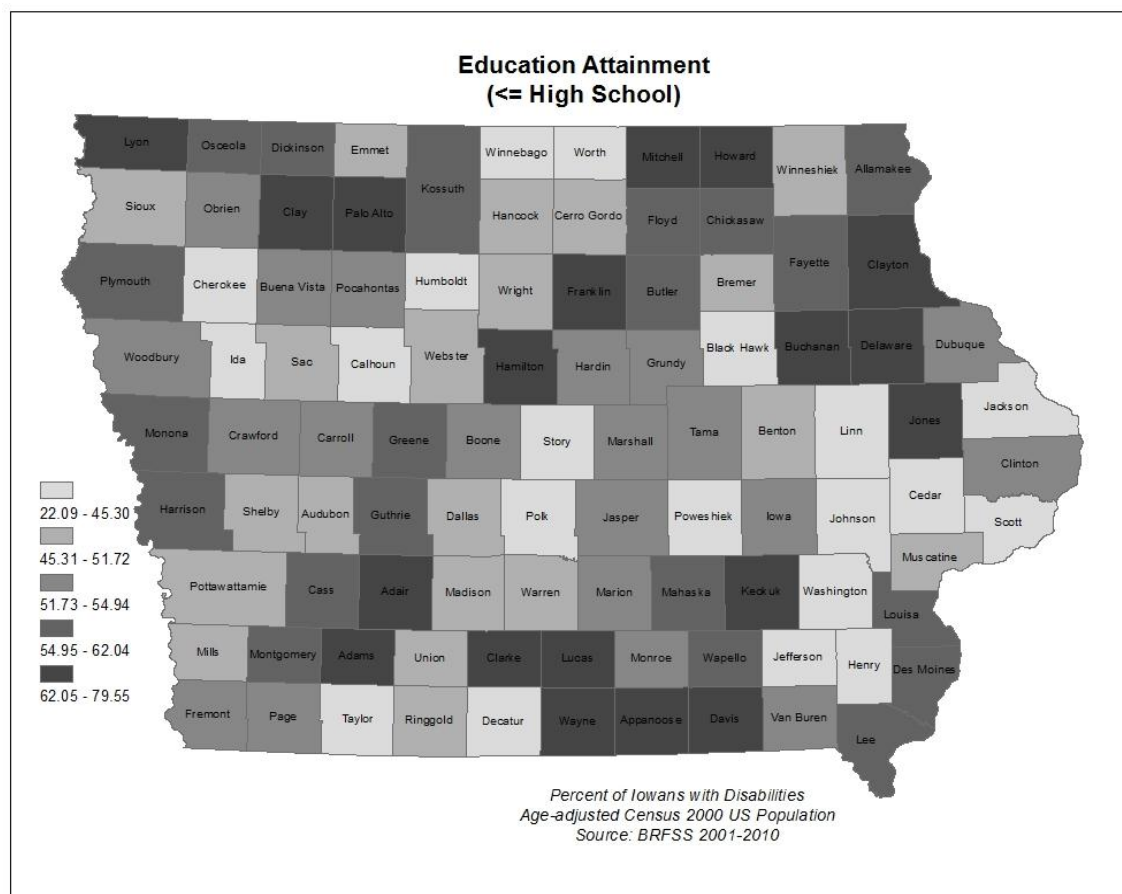


Figure 23: Age-adjusted Percent of PWD Who Reported Having No More than a High School Education

Household Income

The following core BRFSS question was asked to assess household income: *“Is your annual household income from all sources: Less than \$10,000; \$10,000 to less than \$15,000; \$15,000 to less than \$20,000 \$20,000 to less than \$25,000; \$25,000 to less than \$35,000; \$35,000 to less than \$50,000 \$50,000 to less than \$75,000; and \$75,000 or more.”* The strata were collapsed into two groups: less than \$25,000 and over \$25,000.

The age-adjusted proportion of PWD who had less than \$25,000 household income showed some clusters in the southern and northern region and border counties of the state (Figure 24).

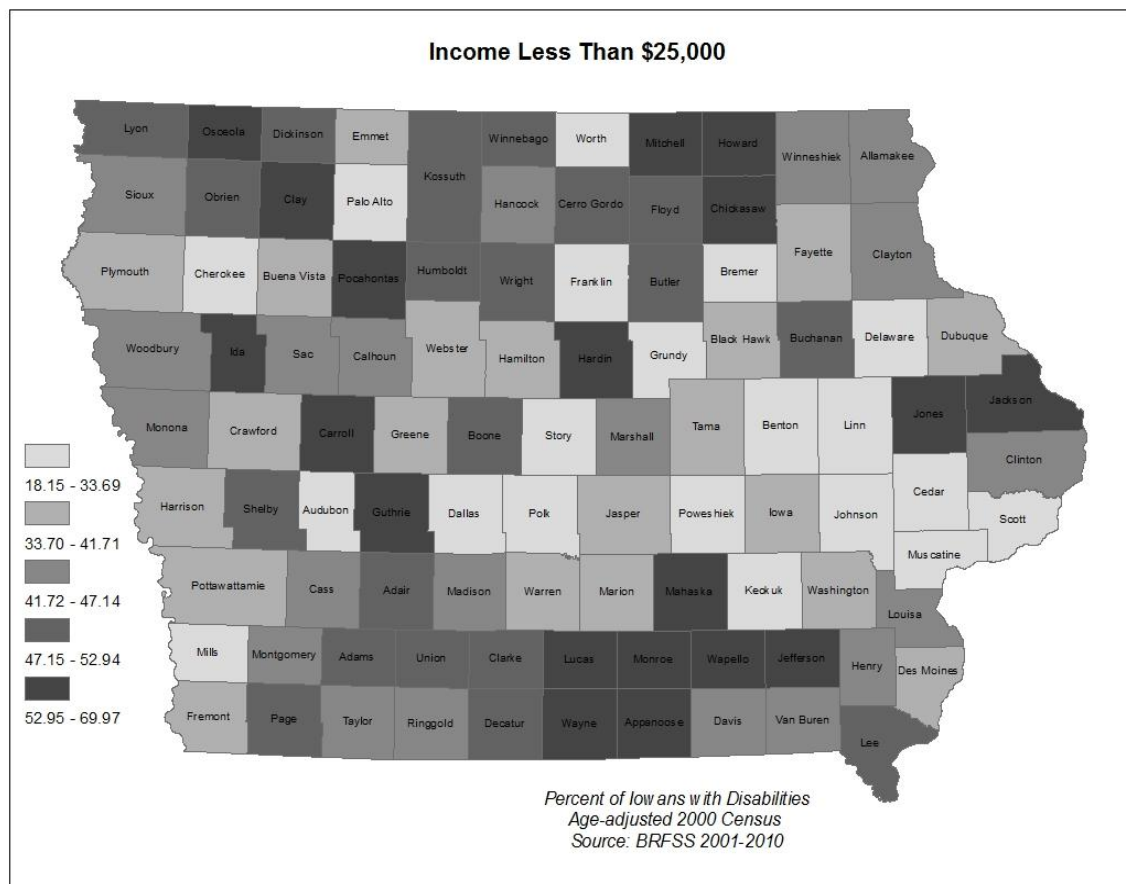


Figure 24: Age-adjusted Percent of PWD Who Reported Total Household Income Less Than \$25,000 a year

Employment

The following core BRFSS question was about employment: *“Are you currently employed for wages; self-employed; out of work for more than 1 year; out of work for less than 1 year; a homemaker; a student; retired; unable to work?”* The strata *“out of work for more than 1 year,” “out of work for less than 1 year,”* and *“unable to work”* were combined into a not working indicator. Answers *“don’t know”* and *refused* were set as missing.

The age-adjusted proportion of PWD who were not working showed few clusters in the southern and northern region and border counties of the state (Figure 25).

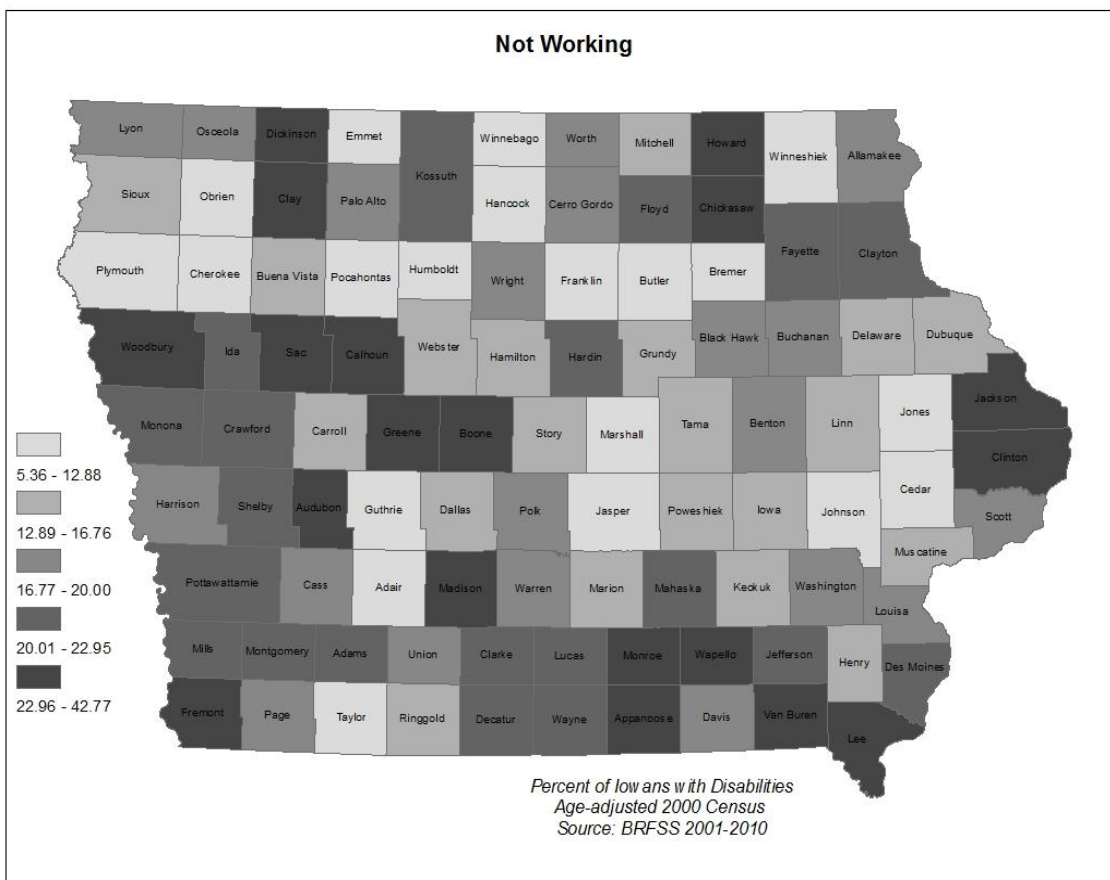


Figure 25: Age-adjusted Percent of PWD Who Reported Not Working (unemployed or unable to work)

Outcome Composite Score

The composite socioeconomic outcome score combined the scores from the county rankings of income less than \$25,000; education attainment level of high school or less; percent not working (unable to work and unemployed).

Counties that have the highest combined ranking scores (range 5 to 8) were considered as areas of the worst socioeconomic outcomes for PWD. Most of these counties were located in southern Iowa and at the state periphery (Figure 26).

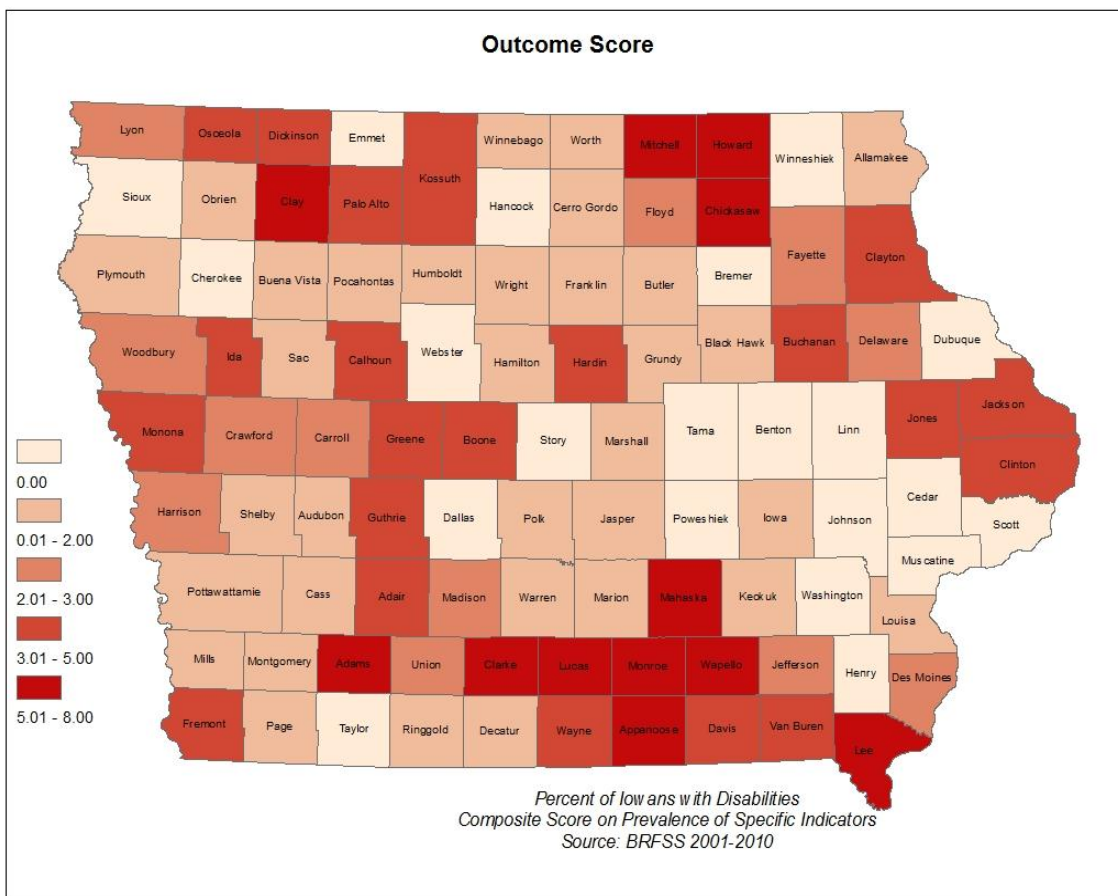


Figure 26: Counties with Worst Socioeconomic Outcomes for PWD, BRFSS 2001-2010

Long Term Care Services

The Iowa Senate file (SF36) set funded positions for long term care advocacy. Advocates called Central Point of Coordination (CPC) by the State County Management Committee represent “Single Point of Entry” as required by Chapter 331 of the Iowa Code.

According to the Iowa Department of Human Services (DHS), there are 78 CPCs working with PWD by centralizing intake for people wishing to access county-funded mental health and developmental disabilities (MH/DD) services. These services and functions include determining legal settlement, referral for service coordination, service and cost tracking, collecting and reporting of data. CPCs also are

responsible for authorizing funding within the guidelines established by the county management plan. In addition, they are responsible for public education, strategic planning, development of the annual MH/DD budget, quality assurance, collaboration with other funders, services providers, consumers and other stakeholders. In the SF36 “people with disabilities are basically defined as those needing long term care;” however, this represents a small percentage of PWD.⁶

In FY 2012, the CPCs served 53,519 PWD, of which 5% were children. Compared to the total estimates of PWD in Iowa (over 400,000), adults needing long-term care served by the CPC represented 13% of that total. This assessment is missing the total number of people that need long term care to estimate the gap in long term care needs. Using the estimated total number of PWD by county, the proportion of people who received long term care by county was estimated.

The quintile distribution showed counties with the highest percent of PWD receiving long-term care were mostly located in the northeastern and eastern regions (Figure 27). Isolated counties were in the southern region and western regions. Except for Johnson County, all metro counties were in the highest quintile. This may reflect the availability of services and not the true need.

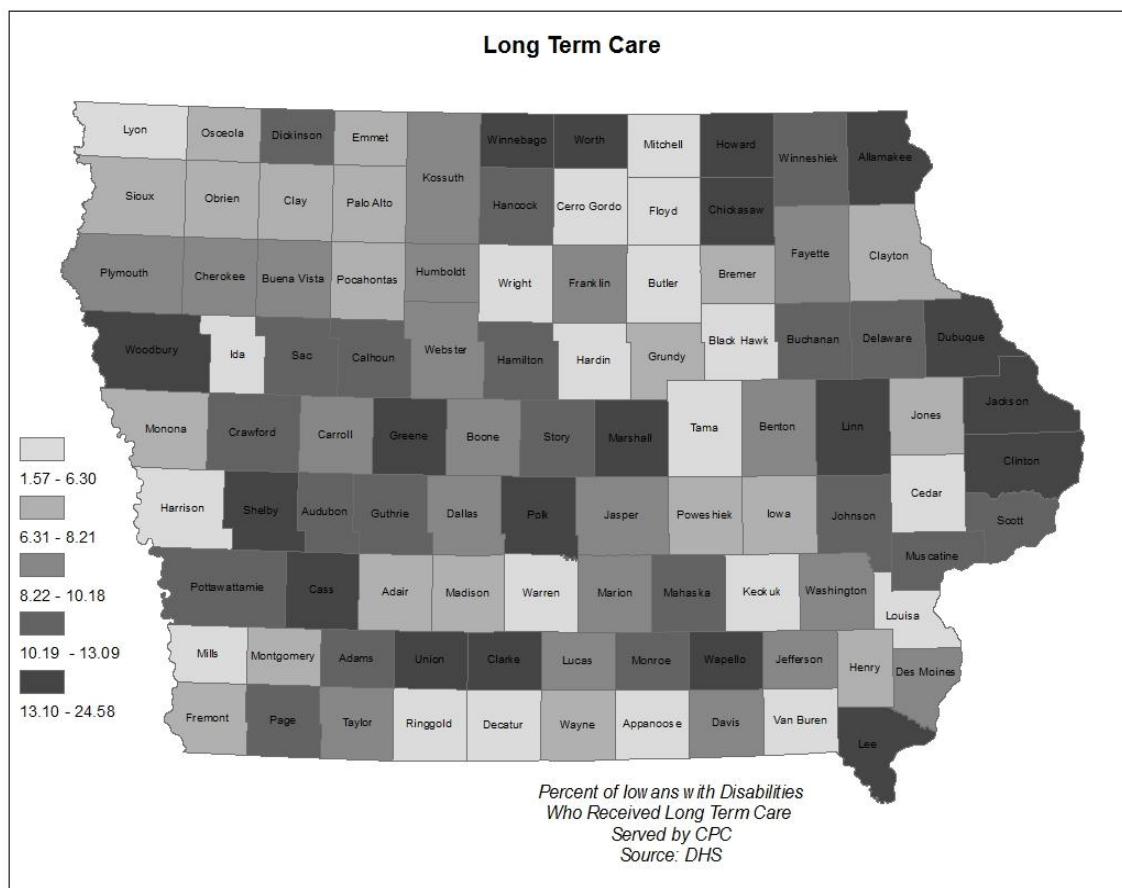


Figure 27: Estimated Proportion of PWD Who Received Long Term Care Services, DHS

Discussion and Conclusions

General Comments on Findings

This PHNA used ACS 2009-2012 and BRFSS 2001-2010, as well as the CDC DHDS BRFSS 2011 state profiles. In the general analysis approach there were two levels of comparison; PWD were compared to PWOD and Iowa PWD were compared to PWD nationally.

The assessment highlighted that counties known for having a higher level of poverty were most likely to present disability-related disparities. Consistently, after controlling for the effects of age, PWD residing in counties at the periphery of Iowa presented a highest need for services, risky behaviors, and chronic disease as well as the worst socioeconomic outcomes.

Data Limitations

BRFSS collects self-reported information on many of the behaviors and conditions that increase the risk of chronic disease among adults, 18 years and older. BRFSS is not intended for surveillance of children. Each BRFSS sample is weighted to the respondent's probability of selection and to the age, sex, and race specific population of each state, which allows generating state point estimates. It is a valid surveillance system but has limitations since the BRFSS is a cross-sectional survey. The ACS data had more robust sampling based on household. However, county specific data were not available.

The effect of race in disability disparity was not investigated due to the low proportion of ethnic minorities in Iowa.

This assessment is incomplete at best as resources at the county level were not investigated. Despite the fact that there are county coordinators, the needs in long term care services could not be established. In fact, the proportion of PWD served in long term care may be misleading as the sources of the estimates were not identical.

Recommendations

The use of different definitions for disability generates difficulties in the consistency of findings from one data system to another. The move from the BRFSS to include sensory (hearing and vision) questions in the core survey should be encouraged.

There are so many other sources of data that can be used in the comprehensive assessment of disability issues. The translation of ICD 9 - 10 codes using disability weights into disability constructs disability adjusted life years (DALYs) could help identify medically-related cases of disability from death records and hospitalizations. The DALYs would allow identifying counties of needs for preventive services from a population based data sources.

This PHNA should be shared with local health department for inclusion in the Community Health Needs Assessment Health Improvement Plan (CHNA/HIP).

Conclusion

Adult Iowans with disability compared to those without, are faced with several challenges. They are more likely to suffer from debilitating chronic conditions and social disparities. Iowans with a disability also are faced with difficulties in terms of education achievement, work, income and family life. In Iowa, the needs assessment demonstrated a higher need in rural counties and particularly in the southern region and along state borders.

This report lays the groundwork for a clearer picture of the needs of more than 400,000 Iowans with disabilities so that their needs can be addressed by policy makers at the local and state level of governments, advocacy groups, and others concerned about improving the health and productivity of Iowans with disabilities where they live, learn, work, and play. Finally, this assessment establishes a baseline at the county level that can be used for tracking purposes.

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